



# STIC Search Report

## EIC 1700

STIC Database Tracking Number: 114512

TO: Amanda Walke

Location: 9D64

Art Unit : 1752

February 19, 2004

Case Serial Number: 10/070477

From: Michael Newell

Location: EIC 1700

REMSEN 4A30

Phone: 571/272-2538

MNewell@uspto.gov

### Search Notes

Deliver to Remsen 9D64. Thank you.



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher or contact:*

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

➤ I am an examiner in Workgroup:  Example: 1713

➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

*Types of relevant prior art found:*

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

**Comments:**

**Drop off or send completed forms to EIC1700 REMSEN 4B28**



=> d his

(FILE 'HOME' ENTERED AT 10:33:11 ON 19 FEB 2004)

FILE 'LREGISTRY' ENTERED AT 10:33:21 ON 19 FEB 2004

L1           STRUCTURE  
L2           STRUCTURE  
L3           STRUCTURE

FILE 'REGISTRY' ENTERED AT 10:53:39 ON 19 FEB 2004

L4           SCREEN 2043  
L5           0 S (L1 AND L2 AND L3 AND L4) SSS SAM  
L6           0 S (L1 AND L2 AND L3) SSS SAM  
L7           0 S (L1 AND L2) SSS SAM  
L8           2 S L1 SSS SAM  
L9           50 S L2 SSS SAM  
L10          0 S L3 SSS SAM

FILE 'LREGISTRY' ENTERED AT 11:39:46 ON 19 FEB 2004

L11          STRUCTURE  
L12          STRUCTURE  
L13          STRUCTURE

FILE 'REGISTRY' ENTERED AT 11:47:01 ON 19 FEB 2004

L14          2 S (L12 AND L2 AND L13 AND L4) SSS SAM  
L15          58 S (L12 AND L2 AND L13 AND L4) SSS FULL  
              SAVE L15 WAL477/A

FILE 'CAOLD' ENTERED AT 12:08:48 ON 19 FEB 2004

L16          0 S L15

FILE 'HCAPLUS' ENTERED AT 12:09:00 ON 19 FEB 2004

L17          49 S L15  
L18          156025 S PHOTORESIST? OR RESIST OR RESISTS OR PHOTOMASK? OR MASK  
L19          40 S L17 AND L18  
L20          9 S L17 NOT L19

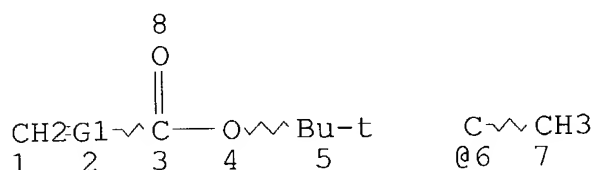
FILE 'LREGISTRY' ENTERED AT 12:11:10 ON 19 FEB 2004

FILE 'HCAPLUS' ENTERED AT 12:13:02 ON 19 FEB 2004

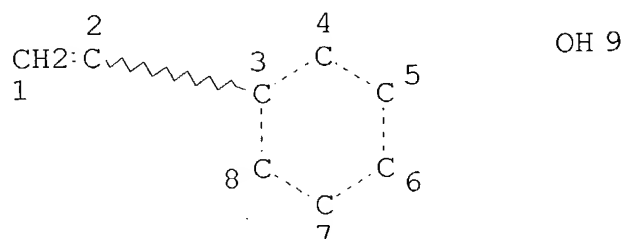
L21          23768 S LIGHT(2A)SENSITIV? OR LIGHTSENSITIV?  
L22          4 S L19 AND L21  
L23          36 S L19 NOT L22

=> d que stat l15

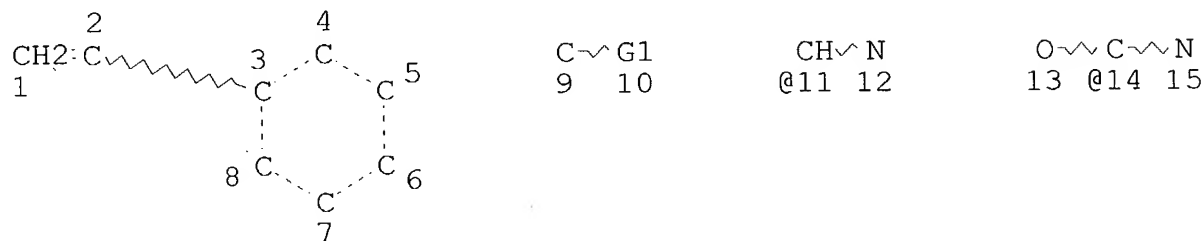
L2           STR



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STEREO ATTRIBUTES: NONE
L4                SCR 2043
L12               STR
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STEREO ATTRIBUTES: NONE
L13                STR
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VAR G1=CL/BR/OH/CN/T-BUO/11/14

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE

L15 58 SEA FILE=REGISTRY SSS FUL (L12 AND L2 AND L13 AND L4)

100.0% PROCESSED 3580 ITERATIONS

58 ANSWERS

SEARCH TIME: 00.00.01

=> d 122 1-4 cbib abs hitstr hitind

L22 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2004 ACS on STN

2003:806137 Document No. 139:330314 Chemically amplified

positive-working **photoresist** composition containing

specific acetal polymer. Adams, Timothy G.; Coley, Suzanne (Shipley

Company, L.L.C., USA). Jpn. Kokai Tokkyo Koho JP 2003295444 A2

20031015, 31 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP

2002-296564 20021009. PRIORITY: US 2001-PV327800 20011009.

AB The invention relates to a **photoresist** compn. contg. a photoactive component and a polymer which has an alicyclic unit and a photoacid-labile acetal unit. The polymer provides effective imaging by sub-300 nm and sub-200 nm light.

IT 612835-42-4

(acetal polymer in chem. amplified pos.-working

**photoresist** compn.)

RN 612835-42-4 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with

1-[1-(1,1-dimethylethoxy)ethoxy]-4-ethenylbenzene, 4-ethenylphenol

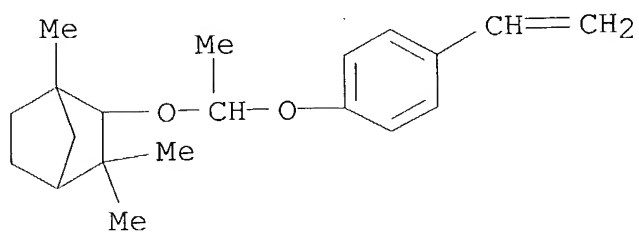
and 2-[1-(4-ethenylphenoxy)ethoxy]-1,3,3-

trimethylbicyclo[2.2.1]heptane (9CI) (CA INDEX NAME)

CM 1

CRN 612835-41-3

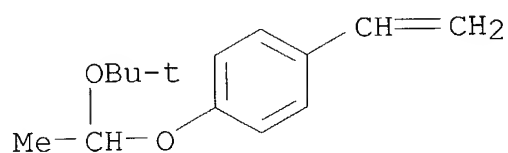
CMF C20 H28 O2



CM 2

CRN 169811-45-4

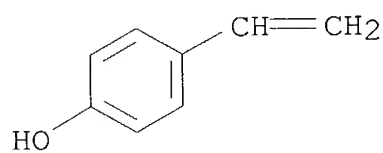
CMF C14 H20 O2



CM 3

CRN 2628-17-3

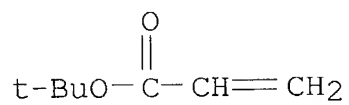
CMF C8 H8 O



CM 4

CRN 1663-39-4

CMF C7 H12 O2



IC ICM G03F007-039  
ICS C08F216-38; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 35

ST chem amplified pos **photoresist** compn acetal polymer

IT **Light-sensitive** materials  
Positive **photoresists**  
(chem. amplified pos.-working **photoresist** compn. contg.  
specific acetal polymer)

IT 612835-42-4  
(acetal polymer in chem. amplified pos.-working  
**photoresist** compn.)

L22 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2004 ACS on STN  
2003:674155 Document No. 139:205041 Positive **photoresists**  
showing superior transparency to F2 excimer laser **light**  
and high **sensitivity**. Sasaki, Tomoya (Fuji Photo Film  
Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003241380 A2  
20030827, 80 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
2002-46283 20020222.

AB The **photoresists**, useful for semiconductor manufg. under  
sub-quarter-micron design rules, comprise (A) polymers increasing  
alkali soly. upon acid action and having unit CR1R2CR3(C6H4L1XNHR4)  
(R1-R3 = H, Cl, CN, Me, F, fluoroalkyl, where  $\geq 1$  of them is F  
or fluoroalkyl; L1 = single bond or bivalent bridging group; X = CO,  
SO2; R4 = H, monovalent org. group) and (B) radiation-sensitive acid  
generators.

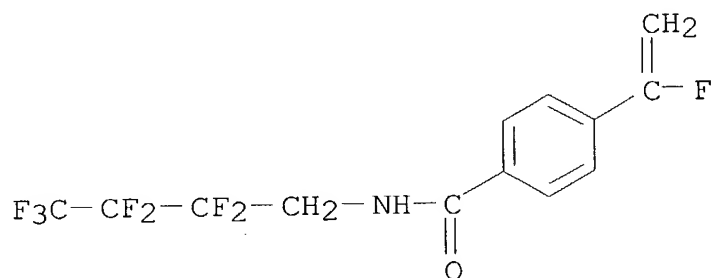
IT 586363-82-8P  
(binder polymers; chem. amplified pos. **photoresists**  
contg. amido- and fluorine-bearing binder polymers of high  
transparency to F2 excimer lasers)

RN 586363-82-8 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
4-(1-fluoroethenyl)-N-(2,2,3,3,4,4,4-heptafluorobutyl)benzamide  
(9CI) (CA INDEX NAME)

CM 1

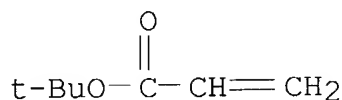
CRN 586363-81-7  
CMF C13 H9 F8 N O



CM 2

CRN 1663-39-4

CMF C7 H12 O2



- IC ICM G03F007-039  
ICS H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 38
- ST amplified pos **photoresist** fluorine laser transparency sensitivity; sulfonamido substituted arom binder **photoresist** laser transparency; fluorine fluoroalkyl substituted acid labile **photoresist** binder
- IT Positive **photoresists**  
(chem. amplified; chem. amplified pos. **photoresists** contg. amido- and fluorine-bearing binder polymers of high transparency to F2 excimer lasers)
- IT 144317-44-2, Triphenylsulfonium nonafluorobutanesulfonate (acid generators; chem. amplified pos. **photoresists** contg. amido- and fluorine-bearing binder polymers of high transparency to F2 excimer lasers)
- IT 1663-39-4DP, tert-Butyl acrylate, polymers with fluoromethylphenylfluorostyrylsulfonamide 326591-95-1DP, polymers with fluoromethylphenylfluorostyrylsulfonamide 586363-79-3P 586363-80-6P **586363-82-8P** 586363-83-9P 586363-85-1P 586363-87-3P 586363-88-4DP, methoxymethylated, polymers with acid-labile monomers 586363-89-5P 586363-90-8P  
(binder polymers; chem. amplified pos. **photoresists** contg. amido- and fluorine-bearing binder polymers of high

transparency to F2 excimer lasers)  
IT 75-04-7, Ethylamine, reactions 753-90-2, 2,2,2-Trifluoroethylamine  
586363-91-9 586363-92-0  
(in monomer synthesis; chem. amplified pos. **photoresists**  
contg. amido- and fluorine-bearing binder polymers of high  
transparency to F2 excimer lasers)

L22 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2004 ACS on STN  
2003:671499 Document No. 139:205039 Positive **photoresists**  
showing superior transparency to 157-nm excimer laser light  
and high **sensitivity**. Sasaki, Tomoya; Mizutani,  
Kazuyoshi; Kanna, Shinichi (Fuji Photo Film Co., Ltd., Japan). Jpn.  
Kokai Tokkyo Koho JP 2003241382 A2 20030827, 39 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 2002-46285 20020222.

AB The **photoresists**, suited for F2 excimer laser lithog.,  
comprise (A) polymers increasing alkali soly. upon acid action and  
having repeating unit XNHR1 (R1 = F-contg. monovalent org. group; X  
= CO, SO2) and (B) radiation-sensitive acid generators.

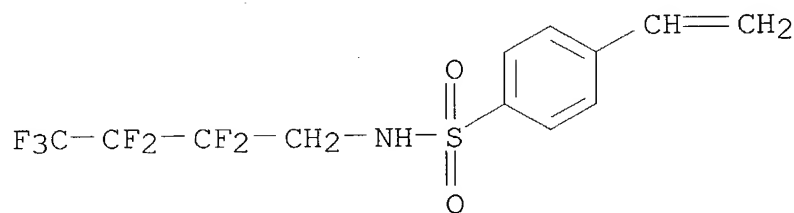
IT 586395-18-8P  
(binder polymers; chem. amplified pos. **photoresists**  
contg. F-substituted acrylamide polymers and showing high  
transparency to 157-nm light)

RN 586395-18-8 HCAPLUS  
CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
4-ethenyl-N-(2,2,3,3,4,4,4-heptafluorobutyl)benzenesulfonamide (9CI)  
(CA INDEX NAME)

CM 1

CRN 586395-17-7

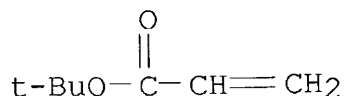
CMF C12 H10 F7 N O2 S



CM 2

CRN 1663-39-4

CMF C7 H12 O2



- IC ICM G03F007-039  
ICS H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 38
- ST amplified pos **photoresist** fluorine laser transparency sensitivity; fluoroethylacrylamide butoxystyrene acid labile **photoresist** binder
- IT Positive **photoresists**  
(chem. amplified pos. **photoresists** contg. F-substituted acrylamide polymers and showing high transparency to 157-nm light)
- IT 144317-44-2, Triphenylsulfonium nonafluorobutanesulfonate (acid generators; chem. amplified pos. **photoresists** contg. F-substituted acrylamide polymers and showing high transparency to 157-nm light)
- IT 586395-00-8P 586395-02-0P 586395-05-3P 586395-07-5P  
586395-10-0P 586395-11-1P 586395-13-3P 586395-15-5P  
**586395-18-8P** 586395-20-2P  
(binder polymers; chem. amplified pos. **photoresists** contg. F-substituted acrylamide polymers and showing high transparency to 157-nm light)
- IT 407-46-5P 586394-98-1P  
(chem. amplified pos. **photoresists** contg. F-substituted acrylamide polymers and showing high transparency to 157-nm light)
- IT 753-90-2, 2,2,2-Trifluoroethylamine 814-68-6, 2-Propenoyl chloride  
1075-49-6, p-Vinylbenzoic acid 5509-65-9, 2,6-Difluoroaniline  
(in monomer synthesis; chem. amplified pos. **photoresists** contg. F-substituted acrylamide polymers and showing high transparency to 157-nm light)
- L22 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2004 ACS on STN  
2003:512118 Document No. 139:86096 Photosensitive polymers having high transmittance and improved dry etching resistance and chemically amplified **resist** compositions containing the same. Choi, Sang-jun; Moon, Joo-tae; Woo, Sang-gyun; Yoon, Kwang-sub; Song, Ki-yong (Samsung Electronics Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2003125511 A1 20030703, 9 pp. (English). CODEN: USXXCO. APPLICATION: US 2002-289108 20021105. PRIORITY: KR 2001-69228 20011107.
- AB The photosensitive polymer with wt. av. mol. wt. 3,000-50,000, useful for fabrication of semiconductors, contains a repeating unit

-[CH<sub>2</sub>C(R<sub>1</sub>)(COOR<sub>2</sub>)]- (R<sub>1</sub> = H, Me; and R<sub>2</sub> = fluorinated ethylene glycol group having 3-10 carbon atoms). Thus, a **resist** compn. comprised 1.0 g copolymer of tert-Bu methacrylate and 1,1-dihydro-3,6-dioxaperfluoroheptyl methacrylate (prepd. by reaction of methacryloyl chloride and fluorinated diethylene glycol monomethyl ether), 8 g polyethylene glycol Me ether acetate, 0.02 g triphenylsulfonium triflate and 2 mg triisobutylamine.

IT 552886-63-2P

(prepn. of photosensitive polymers having high transmittance and improved dry etching resistance for chem. amplified **resist** compns.)

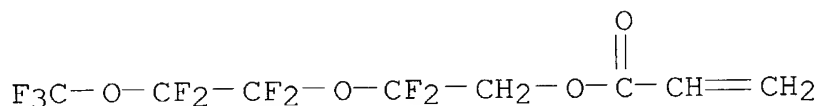
RN 552886-63-2 HCAPLUS

CN 2-Propenoic acid, 2,2-difluoro-2-[1,1,2,2-tetrafluoro-2-(trifluoromethoxy)ethoxy]ethyl ester, polymer with 1,1-dimethylethyl 2-propenoate and 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX NAME)

CM 1

CRN 129905-78-8

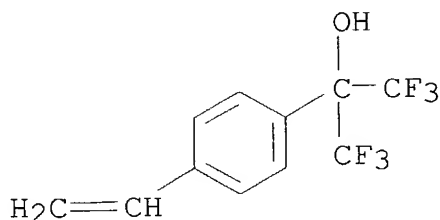
CMF C8 H5 F9 O4



CM 2

CRN 2386-82-5

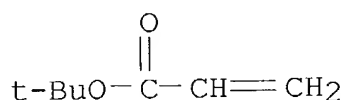
CMF C11 H8 F6 O



CM 3

CRN 1663-39-4

CMF C7 H12 O2



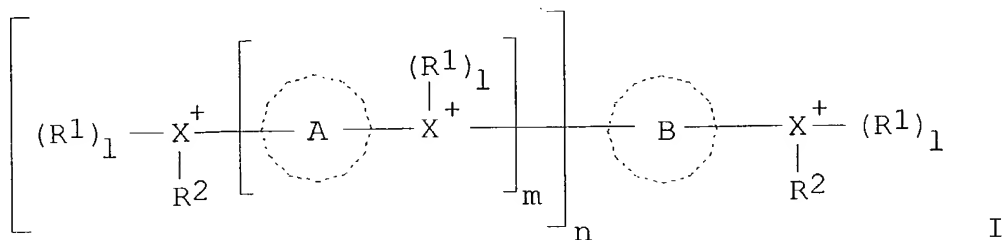
IC ICM C08G073-24  
ICS C08F114-18; C08F014-18  
NCL 528401000; 528271000; 525242000; 525276000; 525326200; 525330700  
CC 37-3 (Plastics Manufacture and Processing)  
Section cross-reference(s): 74, 76  
ST dihydrodioxaperfluoroheptyl methacrylate polymer photosensitive  
prepn **resist**  
IT **Light-sensitive materials**  
**Photoresists**  
(prepn. of photosensitive polymers having high transmittance and  
improved dry etching resistance for chem. amplified  
**resist** compns.)  
IT 129888-38-6P 129905-78-8P 131742-39-7P 131755-30-1P  
(prepn. of photosensitive polymers having high transmittance and  
improved dry etching resistance for chem. amplified  
**resist** compns.)  
IT 552886-60-9P 552886-61-0P 552886-62-1P **552886-63-2P**  
552886-64-3P 552886-65-4P 552886-66-5P  
(prepn. of photosensitive polymers having high transmittance and  
improved dry etching resistance for chem. amplified  
**resist** compns.)  
IT 814-68-6, 2-Propenoyl chloride 920-46-7 147492-57-7  
330562-43-1  
(starting material; prepn. of photosensitive polymers having high  
transmittance and improved dry etching resistance for chem. .  
amplified **resist** compns.)

=&gt; d 123 1-36 cbib abs hitstr hitind

L23 ANSWER 1 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2004:18781 Document No. 140:84637 **Resist** composition.  
Takahashi, Hyou; Yasunami, Shoichiro; Mizutani, Kazuyoshi (Fuji  
Photo Film Co., Ltd., Japan). U.S. Pat. Appl. Publ. US 2004005513  
A1 20040108, 47 pp. (English). CODEN: USXXCO. APPLICATION: US  
2003-606845 20030627. PRIORITY: JP 2002-190581 20020628.

GI





AB The **resist** compn. of the present invention, ensuring excellent pattern profile and excellent isolation performance for use in the pattern formation by the irradiation of actinic rays or radiation, particularly, electron beam, X ray or EUV light, which comprising (A) a compd. having a specific partial structure represented by I [X = sulfur atom, iodine atom; R<sup>1</sup>, R<sup>2</sup> = alkyl, aryl; A, B = hydrocarbon structure; l = 0, 1; m = 0-10; n = 1-5] and a counter ion, the compd. generating an acid upon irradiation of actinic rays or radiation, (B) an alkali-sol. resin, and (C) a crosslinking agent of undergoing an addition reaction with the alkali-sol. resin.

IT 610301-50-3

(acid decomposable resin; **resist** compn. showing excellent pattern profile and isolation performance)

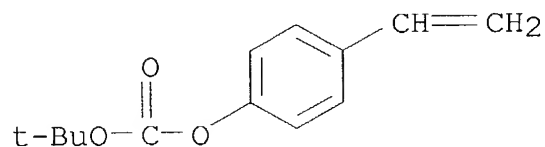
RN 610301-50-3 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with 1,1-dimethylethyl 4-ethenylphenyl carbonate and 4-ethenylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 87188-51-0

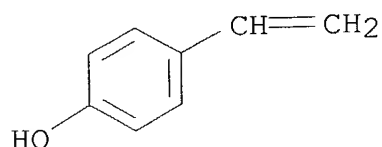
CMF C13 H16 O3



CM 2

CRN 2628-17-3

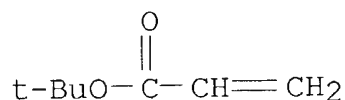
CMF C8 H8 O



CM 3

CRN 1663-39-4

CMF C7 H12 O2



IC ICM G03C001-492  
ICS G03C001-494; G03C001-76  
NCL 430270100  
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 38, 76  
ST **resist** compn acid generator **photoresist** electron  
beam x ray  
IT **Photoresists**  
(UV; **resist** compn. showing excellent pattern profile  
and isolation performance)  
IT Electron beam **resists**  
X-ray **resists**  
(**resist** compn. showing excellent pattern profile and  
isolation performance)  
IT 326591-96-2P  
(acid decomposable resin; **resist** compn. showing  
excellent pattern profile and isolation performance)  
IT 129674-22-2 158593-28-3 159296-87-4 177034-75-2 200808-68-0  
279244-37-0 288620-13-3 372968-15-5 **610301-50-3**  
(acid decomposable resin; **resist** compn. showing  
excellent pattern profile and isolation performance)  
IT 144767-83-9P  
(acid generator; **resist** compn. showing excellent  
pattern profile and isolation performance)  
IT 100093-00-3 641638-14-4 641638-15-5 641638-16-6 641638-17-7  
641638-19-9 641638-21-3 641638-23-5 641638-24-6 641638-26-8  
641638-27-9 641638-28-0 641638-30-4 641638-32-6  
(acid generator; **resist** compn. showing excellent  
pattern profile and isolation performance)

- IT 173786-80-6P, 4-Acetoxystyrene-4-methoxystyrene copolymer  
(alkali-sol. resin; **resist** compn. showing excellent  
pattern profile and isolation performance)
- IT 24979-69-9 24979-70-2 24979-73-5 24979-74-6 149614-53-9  
171429-59-7 185405-14-5 204065-67-8 219838-71-8 321164-59-4  
345212-27-3 345212-59-1 349619-68-7 354589-43-8 396098-38-7  
473313-52-9 575464-71-0  
(alkali-sol. resin; **resist** compn. showing excellent  
pattern profile and isolation performance)
- IT 161679-94-3P 185502-14-1P 185502-15-2P 197087-74-4P  
(crosslinking agent for **resist** compn. showing excellent  
pattern profile and isolation performance)
- IT 3089-11-0  
(crosslinking agent for **resist** compn. showing excellent  
pattern profile and isolation performance)
- IT 102-82-9, Tri-n-butylamine 484-47-9, 2,4,5-Triphenylimidazole  
1122-58-3, 4-Dimethylaminopyridine 3001-72-7, 1,5-  
Diazabicyclo(4.3.0)non-5-ene  
(nitrogen-contg. basic compd. for **resist** compn. showing  
excellent pattern profile and isolation performance)
- IT 71-43-2, Benzene, reactions 139-66-2, Diphenylsulfide 536-80-1,  
Iodosyl benzene 1493-13-6, Trifluoromethanesulfonic acid  
(prepn. of acid generator for **resist** compn. showing  
excellent pattern profile and isolation performance)
- IT 138996-14-2P  
(prepn. of acid generator for **resist** compn. showing  
excellent pattern profile and isolation performance)
- IT 50-00-0, Formalin, reactions 141-78-6, Ethyl acetate, reactions  
110726-28-8, Trisp-PA 161679-95-4 161679-98-7 197087-73-3  
(prepn. of crosslinking agent for **resist** compn. showing  
excellent pattern profile and isolation performance)
- IT 162846-57-3P  
(prepn. of crosslinking agent for **resist** compn. showing  
excellent pattern profile and isolation performance)

L23 ANSWER 2 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

2004:5239 Document No. 140:67635 Photosensitive resin composition.  
Kanna, Shinichi; Mizutani, Kazuyoshi; Sasaki, Tomoya (Fuji Photo  
Film Co., Ltd., Japan). Eur. Pat. Appl. EP 1376232 A1 20040102, 136  
pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT,  
LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG,  
CZ, EE, HU, SK. (English). CODEN: EPXXDW. APPLICATION: EP  
2003-12226 20030606. PRIORITY: JP 2002-167393 20020607; JP  
2002-181384 20020621; JP 2002-181588 20020621.

AB The photosensitive resin compn. of the present invention is an  
excellent photosensitive resin compn.: exhibiting significant  
transmissibility at the use of an exposure light source of 160 nm or  
less, more specifically F2 excimer laser light, where line edge

roughness and development time dependence are small and a problem of footing formation is improved; and comprising a resin which decomp. by an action of acid to increase the soly. in alkali developer, in which the resin contains a specific repeat unit; a compd. capable of generating an acid upon irradiation with one of an actinic ray and a radiation.

IT 485390-49-6P 485390-57-6P 485390-66-7P  
 485390-68-9P 485390-69-0P 500212-79-3P  
 637351-25-8P 637351-28-1P 637351-48-5P

(microlithog. photosensitive resin compn. contg.)

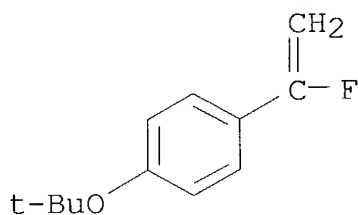
RN 485390-49-6 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
 1-(1,1-dimethylethoxy)-4-(1-fluoroethenyl)benzene and  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

CM 1

CRN 485390-48-5

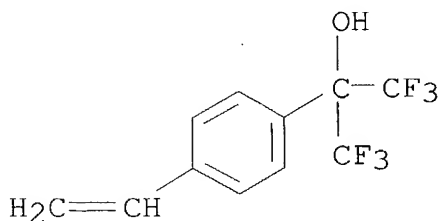
CMF C12 H15 F O



CM 2

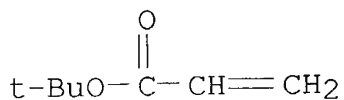
CRN 2386-82-5

CMF C11 H8 F6 O



CM 3

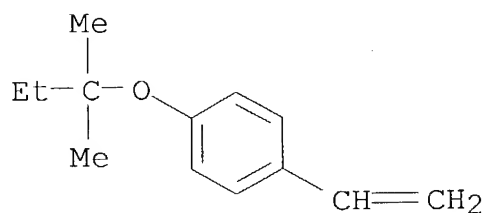
CRN 1663-39-4  
CMF C7 H12 O2



RN 485390-57-6 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
1-(1,1-dimethylpropoxy)-4-ethenylbenzene and 4-ethenyl-  
 $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX  
NAME)

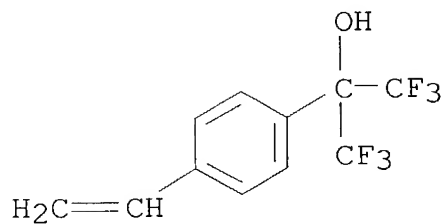
CM 1

CRN 146716-59-8  
CMF C13 H18 O



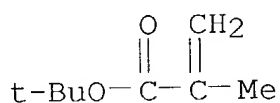
CM 2

CRN 2386-82-5  
CMF C11 H8 F6 O



CM 3

CRN 585-07-9  
CMF C8 H14 O2

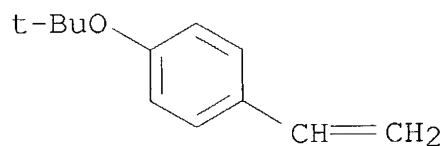


RN 485390-66-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
1-(1,1-dimethylethoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -  
bis(trifluoromethyl)benzenemethanol and 4-(1-methylethenyl)phenol  
(9CI) (CA INDEX NAME)

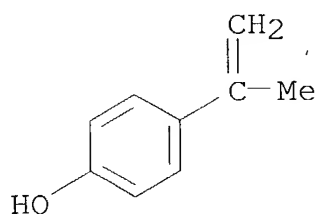
CM 1

CRN 95418-58-9  
CMF C12 H16 O



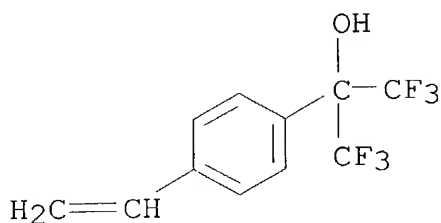
CM 2

CRN 4286-23-1  
CMF C9 H10 O



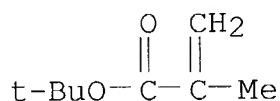
CM 3

CRN 2386-82-5  
CMF C11 H8 F6 O



CM 4

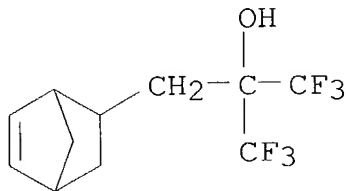
CRN 585-07-9  
CMF C8 H14 O2



RN 485390-68-9 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 $\alpha,\alpha$ -bis(trifluoromethyl)bicyclo[2.2.1]hept-5-ene-2-  
ethanol, 1-(1,1-dimethylethoxy)-4-ethenylbenzene and  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

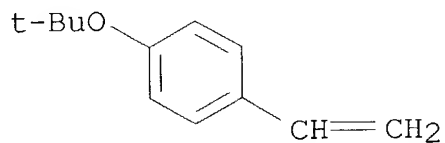
CM 1

CRN 196314-61-1  
CMF C11 H12 F6 O



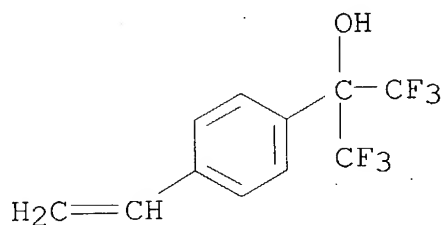
CM 2

CRN 95418-58-9  
CMF C12 H16 O



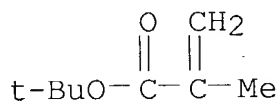
CM 3

CRN 2386-82-5  
CMF C11 H8 F6 O



CM 4

CRN 585-07-9  
CMF C8 H14 O2

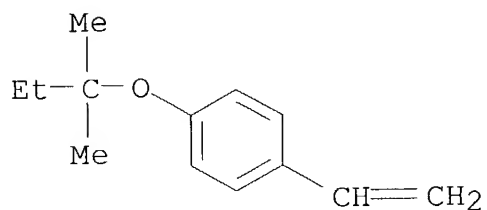


RN 485390-69-0 HCAPLUS  
CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
1-(1,1-dimethylpropoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -  
bis(trifluoromethyl)benzenemethanol and 2-methyl-2-propenenitrile  
(9CI) (CA INDEX NAME)

CM 1

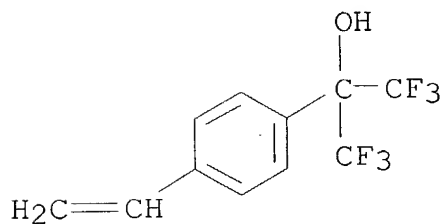


CRN 146716-59-8  
CMF C13 H18 O



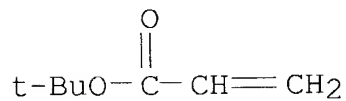
CM 2

CRN 2386-82-5  
CMF C11 H8 F6 O



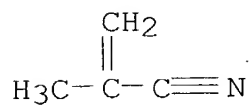
CM 3

CRN 1663-39-4  
CMF C7 H12 O2



CM 4

CRN 126-98-7  
CMF C4 H5 N



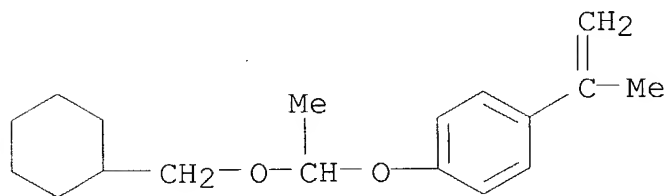
RN 500212-79-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 1-[1-(cyclohexylmethoxy)ethoxy]-4-(1-methylethenyl)benzene and  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

CM 1

CRN 500212-78-2

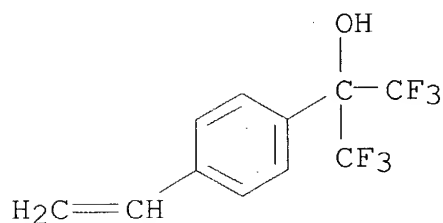
CMF C18 H26 O2



CM 2

CRN 2386-82-5

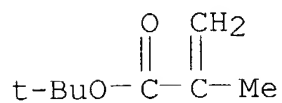
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



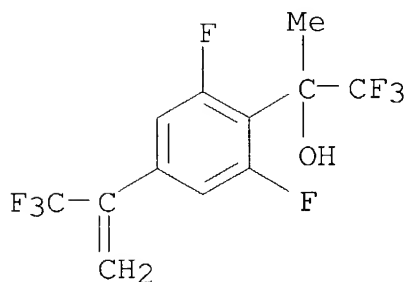
RN 637351-25-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 2,6-difluoro- $\alpha$ -methyl- $\alpha$ -(trifluoromethyl)-4-[1-(trifluoromethyl)ethenyl]benzenemethanol and 1-[1-(4-ethenylphenoxy)-1-methylethyl]tricyclo[3.3.1.3,7]decane (9CI) (CA INDEX NAME)

CM 1

CRN 637351-24-7

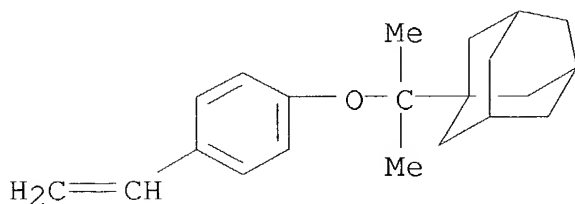
CMF C12 H8 F8 O



CM 2

CRN 430437-25-5

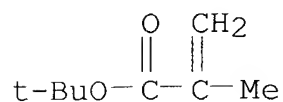
CMF C21 H28 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



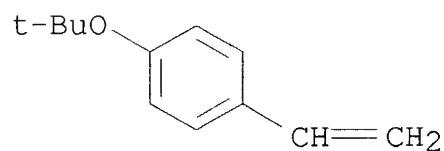
RN 637351-28-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
1-(1,1-dimethylethoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -  
bis(trifluoromethyl)benzenemethanol and 2-propenenitrile (9CI) (CA  
INDEX NAME)

CM 1

CRN 95418-58-9

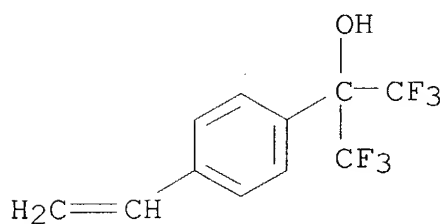
CMF C12 H16 O



CM 2

CRN 2386-82-5

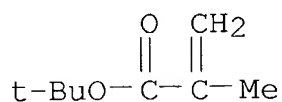
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



CM 4

CRN 107-13-1

CMF C3 H3 N



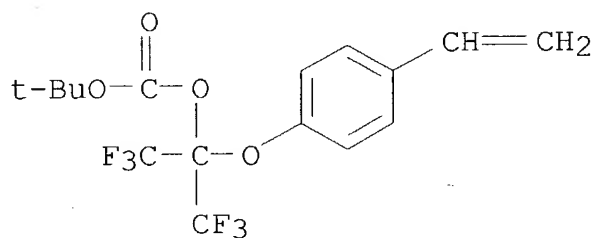
RN 637351-48-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 1-(1,1-dimethylethoxy)-4-ethenylbenzene, 1,1-dimethylethyl  
 1-(4-ethenylphenoxy)-2,2,2-trifluoro-1-(trifluoromethyl)ethyl  
 carbonate and 4-ethenyl- $\alpha,\alpha$ -  
 bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX NAME)

CM 1

CRN 637351-34-9

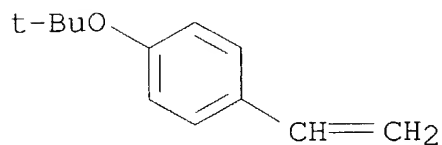
CMF C16 H16 F6 O4



CM 2

CRN 95418-58-9

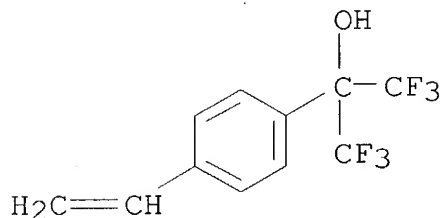
CMF C12 H16 O



CM 3

CRN 2386-82-5

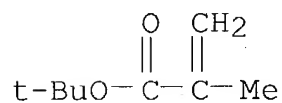
CMF C11 H8 F6 O



CM 4

CRN 585-07-9

CMF C8 H14 O2



IC ICM G03F007-039

ICS G03F007-004

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38, 76

ST **photoresist** photosensitive resin microlithog

IT Lithography

**Photoresists**

(photosensitive resin compn.)

IT	367522-49-4P	370102-83-3P	485390-41-8P	485390-42-9P
	485390-43-0P	485390-45-2P	485390-46-3P	485390-47-4P
	<b>485390-49-6P</b>	485390-52-1P	<b>485390-57-6P</b>	

485390-58-7P 485390-62-3P 485390-65-6P 485390-66-7P  
485390-68-9P 485390-69-0P 500212-79-3P  
500212-80-6P 518027-87-7P 629648-90-4P 637351-23-6P  
637351-25-8P 637351-26-9P 637351-27-0P  
637351-28-1P 637351-29-2P 637351-30-5P 637351-31-6P  
637351-32-7P 637351-33-8P 637351-35-0P 637351-36-1P  
637351-37-2P 637351-38-3P 637351-39-4P 637351-40-7P  
637351-41-8P 637351-42-9P 637351-43-0P 637351-44-1P  
637351-45-2P 637351-46-3P 637351-47-4P 637351-48-5P  
637351-49-6P 637351-51-0P 637351-53-2P 637351-55-4P  
637351-57-6P 637351-58-7P

(microlithog. photosensitive resin compn. contg.)

L23 ANSWER 3 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

2003:945845 Document No. 140:21261 Photosensitive resin composition for photolithography. Kanna, Shinichi; Mizutani, Kazuyoshi; Sasaki, Tomoya (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003344994 A2 20031203, 71 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-154391 20020528.

AB The compn. contains (A) a polymer with repeating unit R50R51R52CC(OR40)CR53R54R55 [R50-55 = H, F, (substituted) alkyl;  $\geq 1$  of R50-55 is F or F-substituted alkyl; R40 = H, (substituted) (cyclo)alkyl, (substituted) acyl, (substituted) alkoxy carbonyl, CR41R42(OR43); R41-42 = H, (substituted) (cyclo)alkyl; R43 = (substituted) (cyclo)alkyl, (substituted) aralkyl, (substituted) aryl; 2 of R41-43 may bond to form a ring], which decomps. by the action of acid and increases its soly. to alkali developer, (B) a compd. generating acid by irradiation of actinic ray, and (C) a solvent having  $\geq 1$  F in a mol. The compn. shows good solvent soly., coatability, improved line edge roughness, and without striation, and is useful for photolithog. in manuf. of large-scaled integrates, etc.

IT 485390-44-1 485390-49-6

(photoresist compn. contg. acid-decomposable polymer, acid generator, and F-contg. solvent)

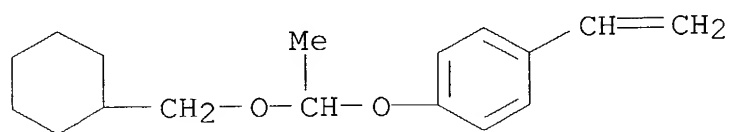
RN 485390-44-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 1-[1-(cyclohexylmethoxy)ethoxy]-4-ethenylbenzene and 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX NAME)

CM 1

CRN 430437-16-4

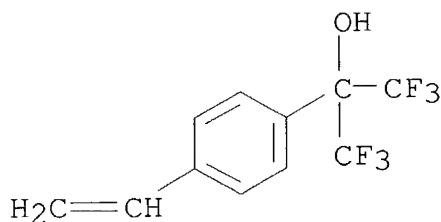
CMF C17 H24 O2



CM 2

CRN 2386-82-5

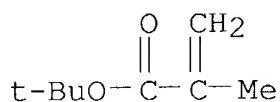
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



RN 485390-49-6 HCAPLUS

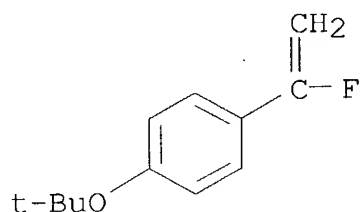
CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
 1-(1,1-dimethylethoxy)-4-(1-fluoroethenyl)benzene and  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

CM 1

CRN 485390-48-5

CMF C12 H15 F O

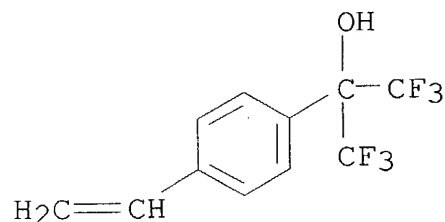




CM 2

CRN 2386-82-5

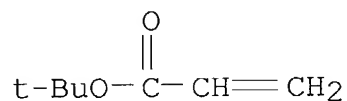
CMF C11 H8 F6 O



CM 3

CRN 1663-39-4

CMF C7 H12 O2



IC ICM G03F007-004

ICS G03F007-039; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 38

ST **photoresist** fluoro solvent photolithog; fluoro polymer  
acid generator **photoresist**

IT Photolithography

**Photoresists**

(**photoresist** compn. contg. acid-decomposable polymer,  
acid generator, and F-contg. solvent)

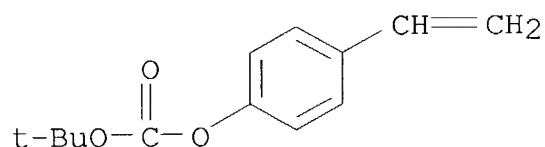
- IT 144317-44-2P, Triphenylsulfonium nonafluorobutanesulfonate  
430437-18-6P 485390-42-9P 607710-77-0P  
(**photoresist** compn. contg. acid-decomposable polymer,  
acid generator, and F-contg. solvent)
- IT 1511-10-0, Triphenylsulfonium trifluoroacetate 19600-49-8,  
Triphenylsulfonium acetate 143336-94-1 153698-46-5,  
Triphenylsulfonium pentafluorobenzenesulfonate 187082-74-2  
241806-75-7 338445-29-7 365971-70-6 365971-71-7 367522-49-4  
422508-63-2 444617-77-0 444617-78-1 485390-41-8  
**485390-44-1** 485390-45-2 485390-46-3 485390-47-4  
**485390-49-6** 485390-52-1 485390-55-4 485390-58-7  
485390-60-1 485390-62-3 485390-63-4 485390-65-6 500212-80-6  
500212-90-8 518027-87-7 629648-89-1 629648-90-4 629648-92-6  
629648-93-7 629648-94-8 629648-95-9 629648-97-1 629648-99-3  
629649-01-0 629649-02-1 629649-03-2 629649-04-3  
(**photoresist** compn. contg. acid-decomposable polymer,  
acid generator, and F-contg. solvent)
- IT 97-64-3, Ethyl lactate 321-28-8, 2-Fluoroanisole 371-26-6, Ethyl  
4,4,4-trifluorobutyrate 1320-67-8, Propylene glycol  
monomethylether 84540-57-8, Propylene glycol monomethylether  
acetate 91600-33-8 143484-00-8 629649-86-1  
(solvent; **photoresist** compn. contg. acid-decomposable  
polymer, acid generator, and F-contg. solvent)
- L23 ANSWER 4 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2003:817583 Document No. 139:314532 Radiation sensitive composition  
and compound. Kodama, Kunihiro (Fuji Photo Film Co., Ltd., Japan).  
Eur. Pat. Appl. EP 1353225 A2 20031015, 99 pp. DESIGNATED STATES:  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK.  
(English). CODEN: EPXXDW. APPLICATION: EP 2003-7989 20030410.  
PRIORITY: JP 2002-108104 20020410; JP 2002-240661 20020821.
- AB The present invention relates to a stimulation sensitive compn. used  
for a semiconductor prodn. process such as IC, a liq. crystal, the  
prodn. of a circuit substrate such as a thermal head, further, other  
photo application system, lithog. printing, an acid curing compn., a  
radical curing compn. and the like. The present invention relates  
to a stimulation sensitive compn. comprising: (A) a compd.  
represented by:  $\text{ArC(=O)CR}_6\text{R}_7\text{S+Y}_1\text{Y}_2\text{X}^-$  (Ar = aryl or arom. group  
contg. a hetero atom;  $\text{R}_6$  = H, cyano, alkyl, aryl group;  $\text{R}_7$  =  
monovalent org. group;  $\text{Y}_{1,2}$  = alkyl, aryl, aralkyl, etc.;  $\text{X}^-$  =  
non-nucleophilic anion) which is capable of generating an acid or a  
radical by stimulation from the external. (B) a resin.
- IT 610301-50-3  
(radiation sensitive **resist** compn. for semiconductor  
prodn. process contg.)
- RN 610301-50-3 HCAPLUS  
CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with

1,1-dimethylethyl 4-ethenylphenyl carbonate and 4-ethenylphenol  
(9CI) (CA INDEX NAME)

CM 1

CRN 87188-51-0

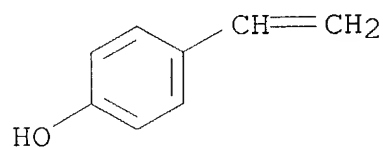
CMF C13 H16 O3



CM 2

CRN 2628-17-3

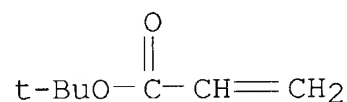
CMF C8 H8 O



CM 3

CRN 1663-39-4

CMF C7 H12 O2



IC ICM G03F007-004

ICS G03F007-039; G03F007-038; C07C323-22

CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)

Section cross-reference(s): 35, 38

ST lithog printing radiation sensitive **resist** compn

IT Lithography

(radiation sensitive **resist** compn. for semiconductor

prodn. process)

IT **Resists**  
 (radiation-sensitive; radiation sensitive compn. and compd. for)

IT 470482-89-4P 610301-07-0P  
 (acid generating agent; radiation sensitive **resist**  
 compn. for semiconductor prodn. process contg.)

IT 66003-78-9 133710-62-0 138529-81-4 144317-44-2 193345-23-2  
 197447-16-8 220475-58-1 227199-92-0 241806-75-7 258341-98-9  
 258872-05-8 284474-28-8 301153-77-5 301664-71-1 301664-72-2  
 347193-28-6 389859-76-1 391232-40-9 398141-17-8 398141-18-9  
 398141-19-0 474510-76-4 592544-87-1 610301-08-1 610301-09-2  
 610301-10-5 610301-12-7 610301-13-8 610301-14-9 610301-16-1  
 610301-18-3 610301-19-4 610301-21-8 610301-23-0 610301-25-2  
 610301-26-3 610301-28-5 610301-30-9 610301-32-1 610301-34-3  
 610301-36-5 610301-38-7 610301-40-1 610301-42-3 610301-44-5  
 610301-46-7 610301-47-8 610301-48-9  
 (acid generating agent; radiation sensitive **resist**  
 compn. for semiconductor prodn. process contg.)

IT 75-77-4, Chlorotrimethylsilane, reactions 513-36-0 827-52-1,  
 Phenylcyclohexane 1600-44-8, Tetramethylenesulfoxide 2168-93-6,  
 Dibutylsulfoxide 13547-70-1 20907-24-8  
 (prepn. of radiation sensitive **resist** compn. for  
 semiconductor prodn. process)

IT 5195-24-4P 56346-00-0P  
 (prepn. of radiation sensitive **resist** compn. for  
 semiconductor prodn. process)

IT 24979-69-9P 24979-70-2P, VP-5000 143336-94-1P 185405-14-5P  
 250378-10-0P, Butyrolactone methacrylate-2-Ethyl-2-adamantyl  
 methacrylate copolymer 289623-64-9P 312620-54-5P 321164-59-4P  
 345212-27-3P 359635-35-1P 370102-83-3P 370866-39-0P  
 391232-36-3P 391613-77-7P 398140-43-7P 398140-45-9P  
 398140-57-3P 398140-59-5P 398140-68-6P 398140-69-7P  
 398140-77-7P 405509-19-5P 406702-00-9P 430437-18-6P  
 459418-30-5P 471257-28-0P 482609-97-2P 508210-04-6P  
 515876-73-0P 521303-15-1P 521303-16-2P 524699-47-6P  
 574735-94-7P 607710-65-6P 607710-66-7P 607710-67-8P  
 607710-68-9P 607710-69-0P 607710-70-3P 607710-71-4P  
 607710-72-5P 607710-73-6P 607710-76-9P 607710-77-0P  
 610300-92-0P 610300-93-1P 610300-94-2P 610300-95-3P  
 610300-96-4P 610300-97-5P 610300-98-6P 610301-00-3P  
 610301-01-4P 610301-03-6P 610301-04-7P 610301-05-8P  
 (radiation sensitive **resist** compn. for semiconductor  
 prodn. process contg.)

IT 129674-22-2 158593-28-3 177034-75-2 200808-68-0 325143-38-2  
 372968-15-5 610301-49-0 **610301-50-3**  
 (radiation sensitive **resist** compn. for semiconductor  
 prodn. process contg.)

IT 120-07-0, N-Phenyldiethanolamine 484-47-9, 2,4,5-

Triphenylimidazole 621-77-2, Tripentylamine 1116-76-3,  
Tri-n-octylamine 1672-63-5, 4-Hydroxyantipyrine 2052-49-5,  
Tetrabutylammonium hydroxide 3001-72-7, 1,5-Diazabicyclo[4,3,0]non-  
5-ene 3040-44-6, 1-Piperidineethanol 19293-63-1,  
Dicyclohexylmethylamine 19600-49-8, Triphenylsulfonium acetate  
24544-04-5, 2,6-Diisopropylaniline 70384-51-9  
(radiation sensitive **resist** compn. for semiconductor  
prodn. process contg.)

L23 ANSWER 5 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

2003:717781 Document No. 139:237717 Polymer blend and associated  
methods of preparation and use. Breyta, Gregory; Ito, Hiroshi;  
Truong, Hoa D. (USA). U.S. Pat. Appl. Publ. US 2003171490 A1  
20030911, 20 pp. (English). CODEN: USXXCO. APPLICATION: US  
2002-90646 20020304.

AB A polymer blend is provided for use in a lithog. **photoresist**  
compn., particularly a chem. amplification **photoresist**.  
In a preferred embodiment, the polymer blend is substantially  
transparent to deep UV radiation, i.e., radiation of a wavelength  
less than 250 nm, including wavelengths of 157 nm, 193 nm and 248  
nm, and has improved sensitivity and resolu. Processes for prepg.  
and using the polymer blend are also provided, as are lithog.  
**photoresist** compns. that contain the polymer blend.

IT 370866-15-2P

(polymer blend for **photoresist** compn.)

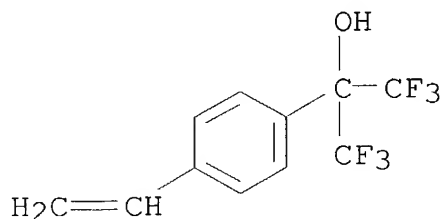
RN 370866-15-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

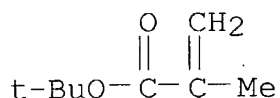
CRN 2386-82-5

CMF C11 H8 F6 O



CM 2

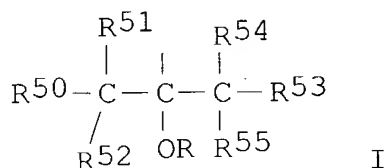
CRN 585-07-9  
CMF C8 H14 O2



IC ICM G03F007-038  
ICS C08L001-00  
NCL 525050000; 430270100; 430907000  
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 35, 38  
ST **photoresist** polymer blend synthesis lithog  
IT **Photoresists**  
(polymer blend for **photoresist** compn.)  
IT Polymer blends  
(polymer blend for **photoresist** compn.)  
IT Photolithography  
(vacuum UV; polymer blend for **photoresist** compn.)  
IT **370866-15-2P** 478623-16-4P 594855-58-0P 594855-59-1P  
(polymer blend for **photoresist** compn.)  
IT 370102-75-3  
(polymer blend for **photoresist** compn.)

L23 ANSWER 6 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2003:693241 Document No. 139:221608 Photosensitive resin composition.  
Sasaki, Tomoya; Mizutani, Kazuyoshi; Kanna, Shinichi (Fuji Photo  
Film Co., Ltd., Japan). Eur. Pat. Appl. EP 1341038 A2 20030903, 115  
pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT,  
LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG,  
CZ, EE, HU, SK. (English). CODEN: EPXXDW. APPLICATION: EP  
2003-4254 20030226. PRIORITY: JP 2002-50031 20020226.

GI



AB The photosensitive resin compn. comprises: (A) a resin contg. a  
repeating unit having at least two groups represented by I (R50-55 =

H, F, alkyl; at least one of R50-55 = F, or an alkyl group is substituted with F; R = H, org. group); and (B) a compd. capable of generating an acid by the action with one of an actinic ray and a radiation. The photosensitive resin compn. is suitable used for the micro-lithog. process such as the manuf. of ULSIs and high capacity microchips and other photo fabrication processes.

IT 585573-43-9P 585573-45-1P

(resin; photosensitive resin compn. for photoresist contg.)

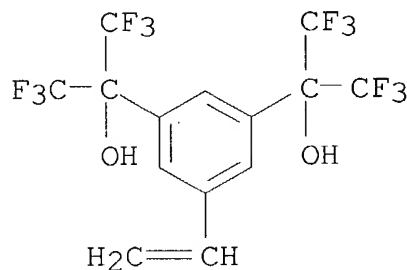
RN 585573-43-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 5-ethenyl- $\alpha,\alpha,\alpha',\alpha'$ -tetrakis(trifluoromethyl)-1,3-benzenedimethanol (9CI) (CA INDEX NAME)

CM 1

CRN 568587-26-8

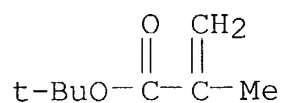
CMF C14 H8 F12 O2



CM 2

CRN 585-07-9

CMF C8 H14 O2



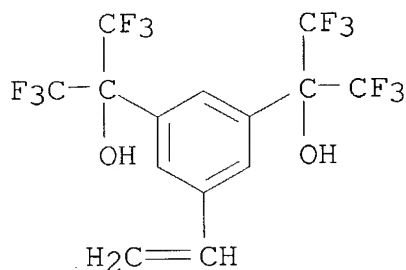
RN 585573-45-1 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with 5-ethenyl- $\alpha,\alpha,\alpha',\alpha'$ -tetrakis(trifluoromethyl)-1,3-benzenedimethanol (9CI) (CA INDEX NAME)

CM 1

CRN 568587-26-8

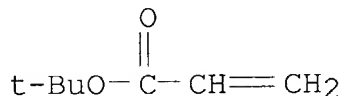
CMF C14 H8 F12 O2



CM 2

CRN 1663-39-4

CMF C7 H12 O2



IC ICM G03F007-004

ICS G03F007-039

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38

ST **photoresist** photolithog photosensitive resin compnIT **Photoresists**

Semiconductor device fabrication

(photosensitive resin compn. for)

IT 802-93-7, 1,3-Bis-(2-Hydroxyhexafluoroisopropyl)benzene

(18prepn. of photosensitive resin compn. for **photoresist**)

IT 107-30-2, Chloromethyl-methyl ether 108-24-7, Acetic anhydride  
 1826-67-1, Vinyl magnesium bromide 3188-13-4, Chloromethyl-ethyl  
 ether 5292-43-3, tert-Butyl bromoacetate 6674-22-2  
 (prepn. of photosensitive resin compn. for **photoresist**)

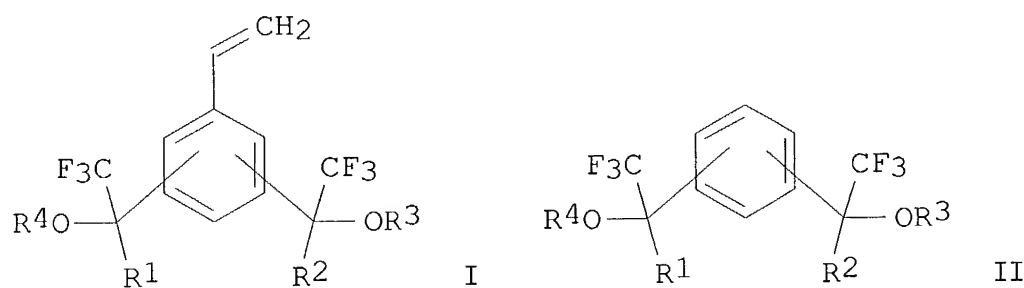
IT 75-07-0P, Acetaldehyde, reactions 501935-24-6P 585569-81-9P  
 585573-34-8P 585573-35-9P 585573-37-1P 585573-39-3P  
 585573-41-7P



- (prepn. of photosensitive resin compn. for **photoresist**)
- IT 24424-99-5DP, Di-tert-butyl dicarbonate, reaction product with hydroxyl group contained styrene copolymer
- (prepn. of photosensitive resin compn. for **photoresist**)
- IT 585569-89-7P 585569-90-0P 585573-42-8P **585573-43-9P**  
 585573-44-0P **585573-45-1P** 585573-46-2P 585573-48-4P  
 585573-49-5P 585573-50-8P 585573-51-9DP, reaction product with di-t-Bu dicarbonate 585573-51-9P 585573-53-1P 585573-55-3P  
 585573-56-4P 585573-57-5P 585573-58-6P 585573-60-0P  
 585573-61-1P 585573-62-2P 585573-63-3P 585573-64-4P  
 585573-66-6P 585573-67-7P 585573-68-8P 585573-70-2P  
 585573-71-3P 585573-73-5P 585573-74-6P 585573-75-7P  
 585573-76-8P 585578-38-7P 585578-39-8P
- (resin; photosensitive resin compn. for **photoresist** contg.)

L23 ANSWER 7 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
 2003:671118 Document No. 139:205035 Fluorine-containing styrene derivatives and their preparation, macromolecular compounds, antireflection coating materials and chemically amplified **resist** materials. Komoritani, Haruhiko; Tsunoda, Shinichi; Otani, Mitsutaka; Maeda, Kazuhiko (Central Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003238620 A2 20030827, 19 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-125505 20020426. PRIORITY: JP 2001-380776 20011213.

GI



AB The styrene derivs. represented by general formula I (R1, R2 = H, Me, CF3; R3, R4 = H, C1-25 alkyl, fluorinated alkyl, arom. ring-contg. cyclic body, acid-removable group; R3 and R4 may contain O atom or carbonyl bond) are prepd. by reacting benzene derivs. II (R1-R4 = same as in I) with EtBr in the presence of Lewis acid or protonic acid to give ethylbenzene derivs., followed with

bromination in the presence of radical initiator and subsequent thermal decompn. The styrene derivs. will be polymd. or copolymd. with  $\geq 1$  of comonomers selected from acrylic acid esters, methacrylic acid esters, F-contg. acrylic acid esters, F-contg. methacrylic acid esters, styrene-based compds. F-contg. styrene-based compds., vinyl ethers, F-contg. vinyl ethers, olefins, F-contg. olefins, norbornenes, or F-contg. norbornenes. The macromol. compds. have high transparency in wide wavelength range, i.e., from vacuum UV to those for optical communication, low refractive index, high adhesion strength to substrates, good film-formability, and etching resistance.

IT 585569-96-6P

(prepn. of CF<sub>3</sub>- and HO-substituted styrene derivs. and their macromol. compds., antireflection coatings and chem. amplified resists)

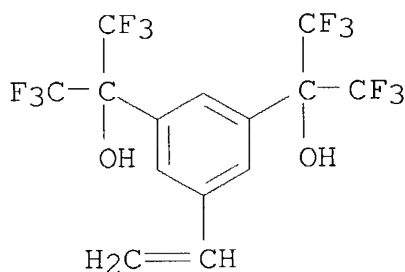
RN 585569-96-6 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with 5-ethenyl- $\alpha, \alpha', \alpha'$ -tetrakis(trifluoromethyl)-1,3-benzenedimethanol and 3,3,3-trifluoro-2-(trifluoromethyl)-1-propene (9CI) (CA INDEX NAME)

CM 1

CRN 568587-26-8

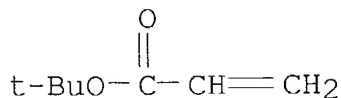
CMF C14 H8 F12 O2



CM 2

CRN 1663-39-4

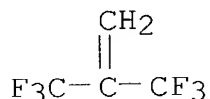
CMF C7 H12 O2



CM 3

CRN 382-10-5

CMF C4 H2 F6



- IC ICM C08F012-14  
ICS C07C029-58; C07C033-48; C07C041-24; C07C043-176; C07C068-00;  
C07C069-96; G03F007-033; C07B061-00
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 35, 37, 38, 42
- ST trifluoromethyl hydroxy substituted styrene deriv prepn;  
antireflection coating trifluoromethyl hydroxy styrene polymer; chem  
amplified **resist** trifluoromethyl hydroxy styrene polymer
- IT Positive **photoresists**  
(DUV **resist**; prepn. of CF3- and HO-substituted styrene  
derivs. and their macromol. compds., antireflection coatings and  
chem. amplified **resists**)
- IT Antireflective films  
(prepn. of CF3- and HO-substituted styrene derivs. and their  
macromol. compds., antireflection coatings and chem. amplified  
**resists**)
- IT 585569-79-5P 585569-80-8P  
(intermediate in monomer prepn.; prepn. of CF3- and  
HO-substituted styrene derivs. and their macromol. compds.,  
antireflection coatings and chem. amplified **resists**)
- IT 74-96-4, Ethyl bromide 802-93-7 7726-95-6, Bromine, reactions  
(monomer prepn. from; prepn. of CF3- and HO-substituted styrene  
derivs. and their macromol. compds., antireflection coatings and  
chem. amplified **resists**)
- IT 568587-26-8P  
(prepn. of CF3- and HO-substituted styrene derivs. and their  
macromol. compds., antireflection coatings and chem. amplified  
**resists**)
- IT 585569-81-9P 585569-83-1P 585569-85-3P 585569-87-5P  
585569-88-6P 585569-89-7P 585569-90-0P 585569-91-1P  
585569-94-4P 585569-95-5P **585569-96-6P** 585569-97-7P  
585569-98-8P 585569-99-9P 585570-00-9P 585571-43-3P  
585571-45-5P  
(prepn. of CF3- and HO-substituted styrene derivs. and their

macromol. compds., antireflection coatings and chem. amplified  
resists)

L23 ANSWER 8 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

2003:470377 Document No. 139:44224 Positive-working **resist**  
composition containing specific fluorine group-containing resin.  
Kanna, Shinichi; Mizutani, Kazuyoshi; Kodama, Kunihiro; Sasaki,  
Tomoya (Fuji Photo Film Co., Ltd., Japan). Eur. Pat. Appl. EP  
1319981 A2 20030618, 80 pp. DESIGNATED STATES: R: AT, BE, CH, DE,  
DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI,  
RO, MK, CY, AL, TR, BG, CZ, EE, SK. (English). CODEN: EPXXDW.  
APPLICATION: EP 2002-27667 20021212. PRIORITY: JP 2001-380104  
20011213; JP 2001-380105 20011213.

AB The invention relates to a pos. **resist** compn. comprising  
(A) a fluorine group-contg. resin, which has a structure substituted  
with a fluorine atom in the main chain and/or side chain of polymer  
skeleton and a group that is decompd. by the action of an acid to  
increase soly. in an alkali developer and (B) an acid generator  
capable of generating an acid upon irradiation of an actinic ray or  
radiation, and the acid generator of (B) is a compd. selected from a  
sulfonium salt contg. no arom. ring and a compd. having a  
phenacylsulfonium salt structure. The compn. is capable of forming  
a highly precise pattern using a vacuum UV ray of  $\leq 160$  nm  
such as F2 excimer laser beam as a light source for exposure.

IT **430437-40-4P 540729-55-3P**  
(fluorine group-contg. resin)

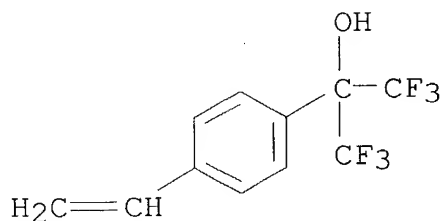
RN 430437-40-4 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
2-methyl-2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

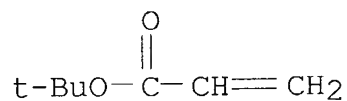
CRN 2386-82-5

CMF C11 H8 F6 O



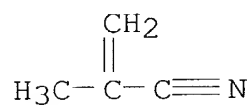
CM 2

CRN 1663-39-4  
CMF C7 H12 O2



CM 3

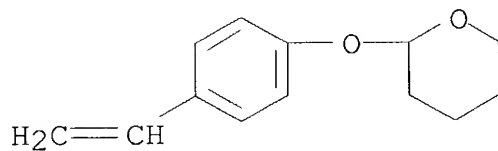
CRN 126-98-7  
CMF C4 H5 N



RN 540729-55-3 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol,  
2-(4-ethenylphenoxy)tetrahydro-2H-pyran and methoxyethene (9CI) (CA  
INDEX NAME)

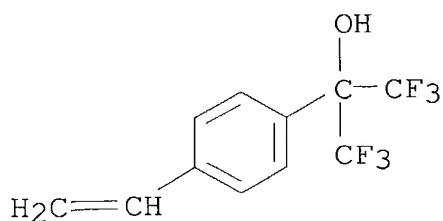
CM 1

CRN 65409-15-6  
CMF C13 H16 O2



CM 2

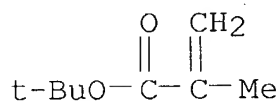
CRN 2386-82-5  
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

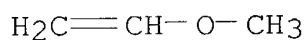
CMF C8 H14 O2



CM 4

CRN 107-25-5

CMF C3 H6 O



IC ICM G03F007-004

ICS G03F007-039

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35

ST pos **resist** compn fluorine resinIT Positive **photoresists**(pos.-working **resist** compn.)

IT	262617-13-0P	430436-66-1P	430436-68-3P	430436-72-9P
	430436-74-1P	430436-76-3P	430436-78-5P	430436-79-6P
	430436-81-0P	430436-84-3P	430436-85-4P	430436-87-6P
	430436-90-1P	430436-92-3P	430436-94-5P	430436-99-0P
	430437-03-9P	430437-07-3P	430437-12-0P	430437-13-1P
	430437-14-2P	430437-15-3P	430437-17-5P	430437-18-6P
	430437-19-7P	430437-21-1P	430437-22-2P	430437-29-9P
	430437-33-5P	430437-35-7P	<b>430437-40-4P</b>	431062-12-3P
	431062-17-8P	431062-22-5P	462109-80-4P	485390-42-9P

540729-50-8P 540729-51-9P 540729-52-0P 540729-54-2P  
540729-55-3P

(fluorine group-contg. resin)

L23 ANSWER 9 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

2003:369197 Document No. 138:393073 Positive-working

**photoresist** composition containing fluoro-substituted nitrogen compound. Fujimori, Toru; Kanna, Shinichi (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003140349 A2 20030514, 53 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-339439 20011105.

AB The compn. contains (A) a polymer with F-substituted main chain or side chain and becomes sol. in alk. developer by the decompn. caused by an acid, (B) a compd. generating acid by actinic ray or radiation, and (C) a nitrogen compd. contg.  $\geq 1$  F atom. The compn. gives clear pattern without development defect.

IT 370866-15-2P 430437-40-4P

(pos. **photoresist** contg. F-contg. alkali-sol. polymer, acid generator, and F-contg. nitrogen compd.)

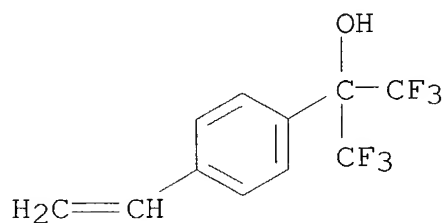
RN 370866-15-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 4-ethenyl- $\alpha, \alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 2386-82-5

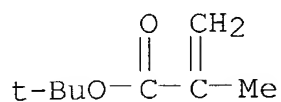
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

CMF C8 H14 O2



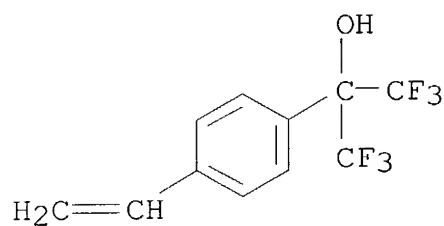
RN 430437-40-4 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
2-methyl-2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 2386-82-5

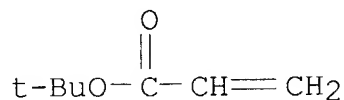
CMF C11 H8 F6 O



CM 2

CRN 1663-39-4

CMF C7 H12 O2

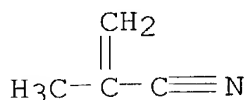


CM 3

CRN 126-98-7

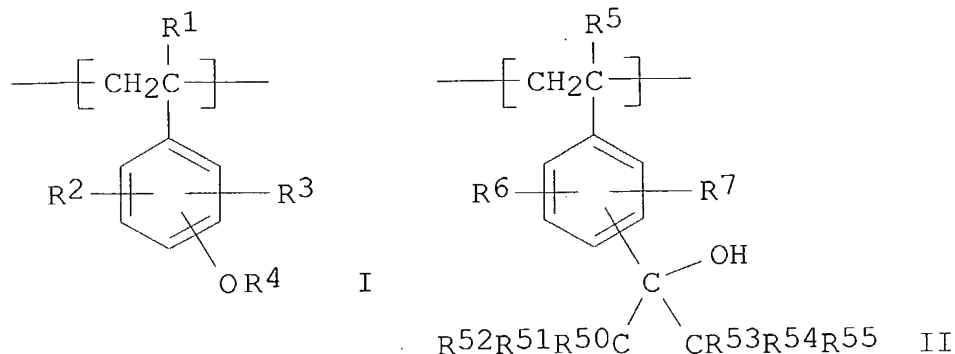
CMF C4 H5 N





- IC ICM G03F007-039  
ICS C08F012-22; C08F014-26; C08F014-28; C08F016-26; C08F016-38;  
C08F020-22; C08F020-28; C08F020-44; C08F032-04; G03F007-004;  
H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 38
- ST pos **photoresist** fluorine nitrogen compd; alkali soluble  
polymer fluorine
- IT Positive **photoresists**  
(pos. **photoresist** contg. F-contg. alkali-sol. polymer,  
acid generator, and F-contg. nitrogen compd.)
- IT 88-17-5 98-16-8 311-89-7 328-74-5 359-70-6 367-71-5  
393-39-5 432-03-1 432-08-6 455-14-1 700-16-3 700-17-4  
771-60-8 1513-65-1 2875-18-5 3048-01-9 3244-44-8 3796-24-5  
(pos. **photoresist** contg. F-contg. alkali-sol. polymer,  
acid generator, and F-contg. nitrogen compd.)
- IT 143643-34-9P 262617-13-0P 370866-13-0P **370866-15-2P**  
397302-29-3P 430436-67-2P 430436-68-3P 430436-70-7P  
430436-72-9P 430436-74-1P 430436-76-3P 430436-78-5P  
430436-79-6P 430436-81-0P 430436-82-1P 430436-84-3P  
430436-85-4P 430436-86-5P 430436-87-6P 430436-89-8P  
430436-90-1P 430436-92-3P 430436-94-5P 430436-98-9P  
430436-99-0P 430437-01-7P 430437-03-9P 430437-04-0P  
430437-05-1P 430437-09-5P 430437-11-9P 430437-12-0P  
430437-13-1P 430437-17-5P 430437-18-6P 430437-19-7P  
430437-21-1P 430437-22-2P 430437-24-4P 430437-27-7P  
430437-29-9P 430437-33-5P 430437-36-8P 430437-37-9P  
430437-39-1P **430437-40-4P** 431062-12-3P 431062-14-5P  
431062-16-7P 431062-17-8P 431062-18-9P 431062-20-3P  
431062-22-5P 487048-93-1P 524952-65-6P 524952-66-7P  
524952-68-9P 524952-69-0P 524952-70-3P 524952-71-4P  
524952-72-5P 524952-73-6P 524952-74-7P  
(pos. **photoresist** contg. F-contg. alkali-sol. polymer,  
acid generator, and F-contg. nitrogen compd.)
- L23 ANSWER 10 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2003:152372 Document No. 138:212786 Vacuum UV-sensitive resin  
composition containing ionic compound reactive towards acid. Kanna,  
Shinichi; Mizutani, Kazuyoshi (Fuji Photo Film Co., Ltd., Japan).  
Jpn. Kokai Tokkyo Koho JP 2003057826 A2 20030228, 66 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-250535 20010821.

GI



AB The title compn. contains a resin which increases the soly. towards an alkali developer by an acid and has repeating unit I, II, and [CH(R17a)-C(R17)(COOR18)] (R1,5,R17, R17a = H, halo, cyano, alkyl; R2,3,6,7 = H, halo, cyano, hydroxyl, etc.; R50-55 = H, F, alkyl; R4 = -C(R11)(R12)(R13), -C(R14)(R15)(-O-R16); R11-13 = alkyl, cycloalkyl, alkenyl, etc.; R14-15 = H, alkyl; R16 = alkyl, cycloalkyl, aralkyl, aryl; R18 = -C(R18d)(R18e)(R18f), -C(R18d)(R18e)(OR18g); R18d-g = H, alkyl, aralkyl, aryl), an actinic ray- or radiation-sensitive acid generator, ionic compd. B+A2- (A2= anionic part; B = cationic part), a solvent, and a surfactant, wherein the acid (A1H) generated by an acid generator and the ionic compd. follow the reaction equation: A1H + B+A2--> B+A2- + A2H. The compn. shows the good light transmittance towards  $\leq 160$  nm light and the decreased dependence on the exposure time and provides the **resist** of the good line edge roughness.

IT 485390-49-6P 485390-56-5P 485390-57-6P  
485390-64-5P 485390-66-7P 485390-69-0P  
500212-79-3P 500212-84-0P

(resin; Vacuum UV-sensitive resin compn. contg. ionic compd. reactive towards acid)

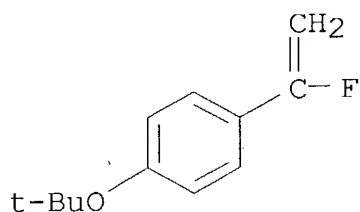
RN 485390-49-6 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with 1-(1,1-dimethylethoxy)-4-(1-fluoroethenyl)benzene and 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 485390-48-5

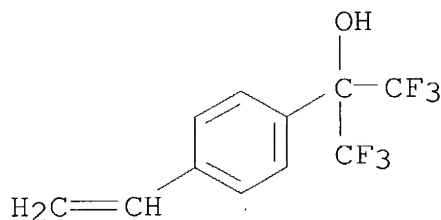
CMF C12 H15 F O



CM 2

CRN 2386-82-5

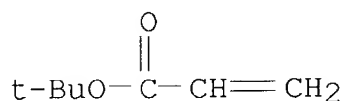
CMF C11 H8 F6 O



CM 3

CRN 1663-39-4

CMF C7 H12 O2



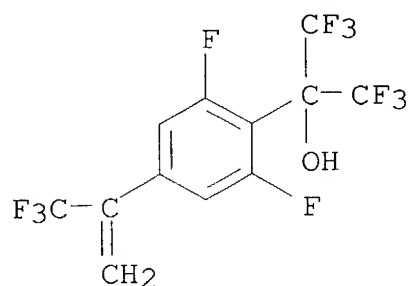
RN 485390-56-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 2,6-difluoro- $\alpha,\alpha$ -bis(trifluoromethyl)-4-[1-(trifluoromethyl)ethenyl]benzenemethanol and 1-[1-(4-ethenylphenoxy)-1-methylethyl]tricyclo[3.3.1.1<sup>3,7</sup>]decane (9CI) (CA INDEX NAME)

CM 1

CRN 430437-28-8

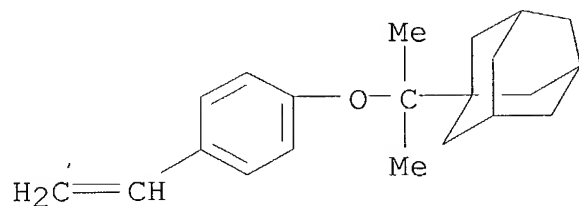
CMF C12 H5 F11 O



CM 2

CRN 430437-25-5

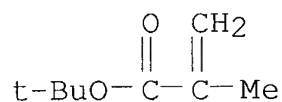
CMF C21 H28 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



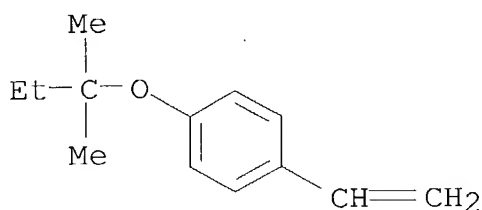
RN 485390-57-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 1-(1,1-dimethylpropoxy)-4-ethenylbenzene and 4-ethenyl-  
 $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX  
 NAME)

CM 1

CRN 146716-59-8

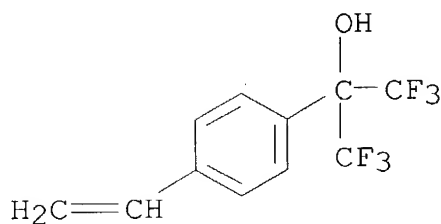
CMF C13 H18 O



CM 2

CRN 2386-82-5

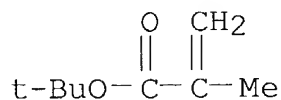
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



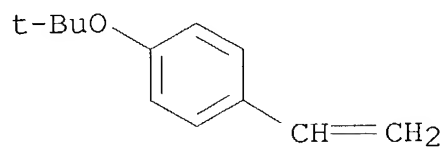
RN 485390-64-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 1-(1,1-dimethylethoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -  
 bis(trifluoromethyl)benzenemethanol and 2-methyl-2-propenenitrile  
 (9CI) (CA INDEX NAME)

CM 1

CRN 95418-58-9

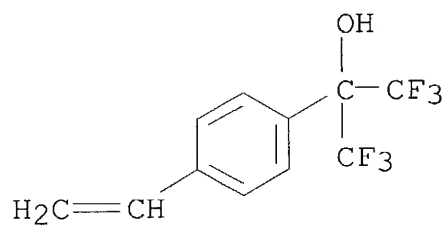
CMF C12 H16 O



CM 2

CRN 2386-82-5

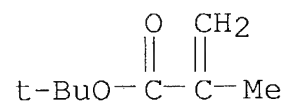
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

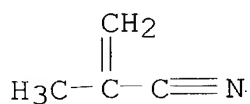
CMF C8 H14 O2



CM 4

CRN 126-98-7

CMF C4 H5 N



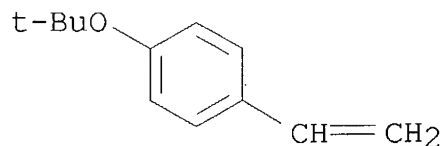
RN 485390-66-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
1-(1,1-dimethylethoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -  
bis(trifluoromethyl)benzenemethanol and 4-(1-methylethenyl)phenol  
(9CI) (CA INDEX NAME)

CM 1

CRN 95418-58-9

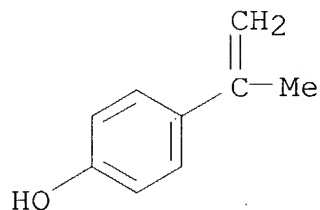
CMF C12 H16 O



CM 2

CRN 4286-23-1

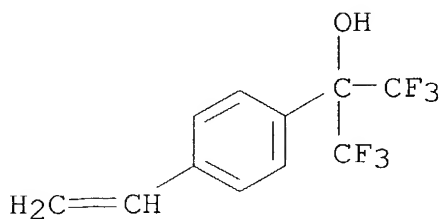
CMF C9 H10 O



CM 3

CRN 2386-82-5

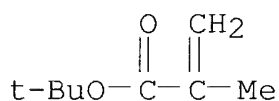
CMF C11 H8 F6 O



CM 4

CRN 585-07-9

CMF C8 H14 O2



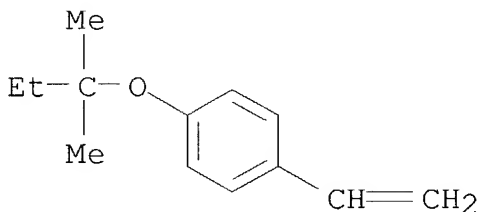
RN 485390-69-0 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
 1-(1,1-dimethylpropoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -  
 bis(trifluoromethyl)benzenemethanol and 2-methyl-2-propenenitrile  
 (9CI) (CA INDEX NAME)

CM 1

CRN 146716-59-8

CMF C13 H18 O

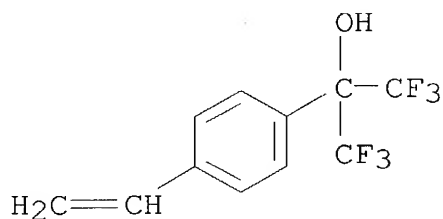


CM 2

CRN 2386-82-5

CMF C11 H8 F6 O

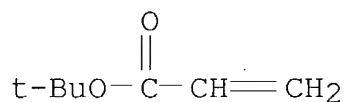




CM 3

CRN 1663-39-4

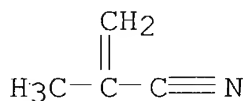
CMF C7 H12 O2



CM 4

CRN 126-98-7

CMF C4 H5 N



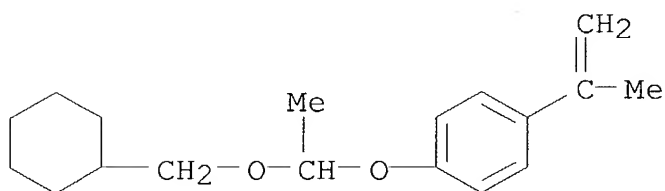
RN 500212-79-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 1-[1-(cyclohexylmethoxy)ethoxy]-4-(1-methylethenyl)benzene and  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

CM 1

CRN 500212-78-2

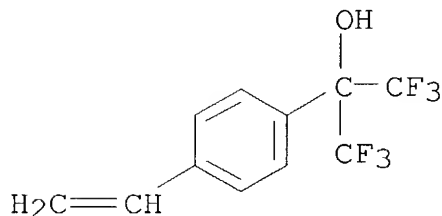
CMF C18 H26 O2



CM 2

CRN 2386-82-5

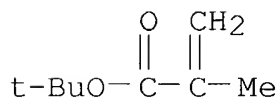
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



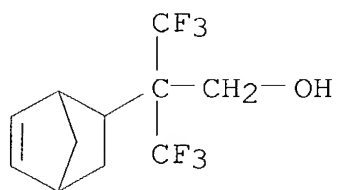
RN 500212-84-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 $\beta,\beta$ -bis(trifluoromethyl)bicyclo[2.2.1]hept-2-ene-2-ethanol, 1-(1,1-dimethylethoxy)-4-ethenylbenzene and  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

CM 1

CRN 500212-83-9

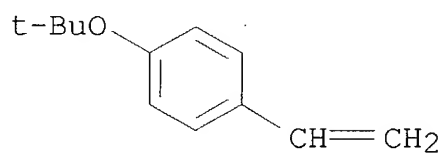
CMF C11 H12 F6 O



CM 2

CRN 95418-58-9

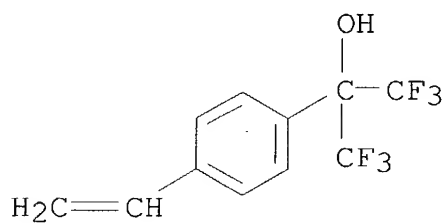
CMF C12 H16 O



CM 3

CRN 2386-82-5

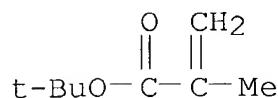
CMF C11 H8 F6 O



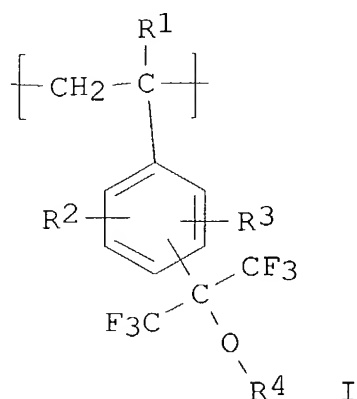
CM 4

CRN 585-07-9

CMF C8 H14 O2



- IC ICM G03F007-039  
ICS C08F212-14; G03F007-004; H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 35
- IT Positive **photoresists**  
(Vacuum UV-sensitive resin compn. contg. ionic compd. reactive towards acid)
- IT 485390-41-8P 485390-42-9P 485390-43-0P 485390-45-2P  
485390-46-3P 485390-47-4P **485390-49-6P** 485390-52-1P  
485390-55-4P **485390-56-5P 485390-57-6P**  
485390-58-7P 485390-60-1P 485390-62-3P 485390-63-4P  
**485390-64-5P** 485390-65-6P **485390-66-7P**  
485390-67-8P **485390-69-0P** 485390-70-3P  
**500212-79-3P** 500212-80-6P 500212-82-8P  
**500212-84-0P** 500212-86-2P 500212-87-3P 500212-88-4P  
(resin; Vacuum UV-sensitive resin compn. contg. ionic compd. reactive towards acid)
- L23 ANSWER 11 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2003:40248 Document No. 138:115049 Chemically amplified positive **photoresist** fluoropolymer compositions with high resolution and transparency to F2 excimer laser beams, and their deposition method. Kanna, Shinichi; Mizutani, Kazuyoshi (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003015301 A2 20030117, 44 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-203565 20010704.
- GI



AB The compns. comprise (A) fluoropolymers, which increase their alkali-soly. in the presence of acids, having repeating units I (R1 = H, F, alkyl; R2, R3 = H, OH, halo, cyano, alkoxy, aryl, etc.; R4 = H, alkyl, acyl, R5R6COR7, etc.; R5, R6 = H, alkyl, cycloalkyl; R7 = alkyl, cycloalkyl, aralkyl, aryl), (B) photoacid generators, and (C) solvents, wherein the compns. are heated at 110-150° in deposition.

IT 370866-15-2P 487048-88-4P

(F-contg. styrene polymers for chem. amplified pos.

photoresists with high resolu. and transparency to F2 excimer laser beams)

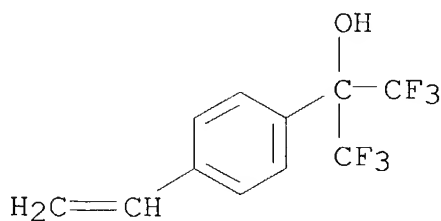
RN 370866-15-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

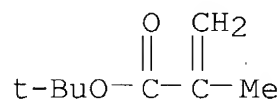
CM 1

CRN 2386-82-5

CMF C11 H8 F6 O

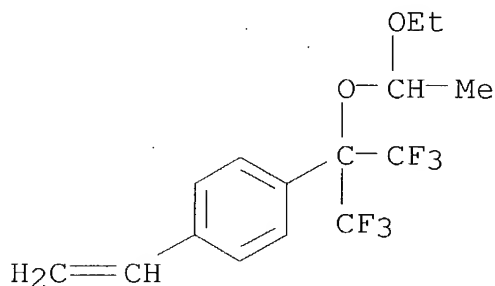


CRN 585-07-9  
CMF C8 H14 O2

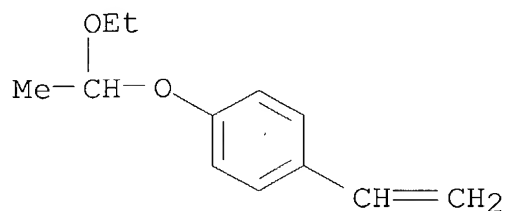


CM 1

CRN 430437-00-6  
CMF C15 H16 F6 O2



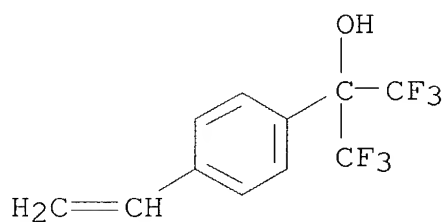
CRN 157057-20-0  
CMF C12 H16 O2



CM 3

CRN 2386-82-5

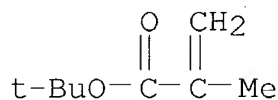
CMF C11 H8 F6 O



CM 4

CRN 585-07-9

CMF C8 H14 O2



IC ICM G03F007-039

ICS C08F012-14; H01L021-027

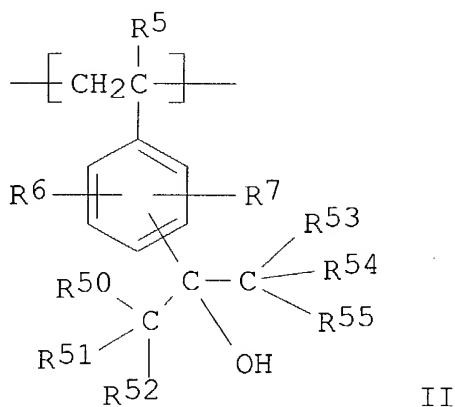
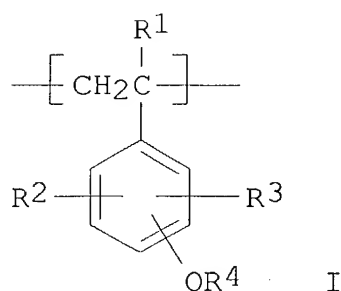
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST pos **photoresist** fluorine excimer laser transparency; chem amplification **photoresist** resolu excimer laser; styrene fluoropolymer **photoresist** fluorine excimer laserIT Positive **photoresists**(F-contg. styrene polymers for chem. amplified pos. **photoresists** with high resolu. and transparency to F2)

- excimer laser beams)
- IT Fluoropolymers, processes  
(F-contg. styrene polymers for chem. amplified pos.  
**photoresists** with high resolu. and transparency to F2  
excimer laser beams)
- IT 109-92-2DP, Ethyl vinyl ether, ethers with F-contg. acrylic styrene  
polymers **370866-15-2P** 397302-29-3P 430437-01-7DP,  
ethers with Et vinyl ether 430437-07-3P 462109-81-5P  
462109-83-7P 462109-85-9P 462109-89-3P 462109-91-7P  
462109-95-1P 487048-75-9P 487048-76-0P 487048-77-1P  
487048-78-2P 487048-79-3P 487048-81-7P 487048-82-8P  
487048-83-9P 487048-85-1P 487048-86-2P 487048-87-3P  
**487048-88-4P** 487048-89-5P 487048-90-8P 487048-92-0P  
487048-93-1P 487048-94-2P 487048-95-3P  
(F-contg. styrene polymers for chem. amplified pos.  
**photoresists** with high resolu. and transparency to F2  
excimer laser beams)

L23 ANSWER 12 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2003:35187 Document No. 138:98199 Positive-working vacuum UV-sensitive  
**photoresist** material composition containing specific resin.  
Kanna, Shinichi; Mizutani, Kazuyoshi (Fuji Photo Film Co., Ltd.,  
Japan). Jpn. Kokai Tokkyo Koho JP 2003015298 A2 20030115, 39 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-202241 20010703.

GI



AB The title compn. contains a resin increasing soly. toward an alkali  
soln. by an acid, a photoacid generator, and a solvent, wherein the  
resin contains repeating unit I, II, and  $[-CH(R_{17a})-C(R_{17})(COOR_{18})-]$   
( $R_{1,5,17a,17} = H, \text{halo, cyano, alkyl}$ ;  $R_{2,3,6,7} = H, \text{halo, cyano,}$   
 $\text{hydroxyl, etc.}$ ;  $R_{50-55} = H, F, \text{alkyl}$ ;  $R_4 = -C(R_{11})(R_{12})(R_{13}),$   
 $-C(R_{14})(R_{15})(-O-R_{16})$ ;  $R_{18} = -C(R_{18d})(R_{18e})(R_{18f}),$



-C(R18d)(R18e)-O-(R18g); R11-13 = alkyl, cycloalkyl, alkenyl, aralkyl, aryl; R14-15 = H, alkyl; R16 = alkyl, cycloalkyl, aralkyl, aryl). The compn. provides the good transparency towards vacuum UV and provides the good soly. contrast towards developers.

IT 485390-44-1P 485390-49-6P 485390-56-5P  
485390-57-6P 485390-64-5P 485390-66-7P  
485390-68-9P 485390-69-0P

(resin; pos.-working vacuum UV-sensitive photoresist material compn. contg. specific resin)

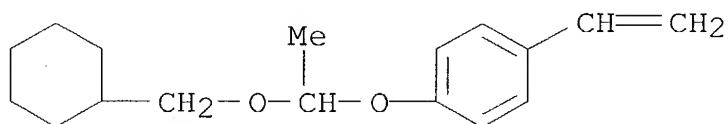
RN 485390-44-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 1-[1-(cyclohexylmethoxy)ethoxy]-4-ethenylbenzene and 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 430437-16-4

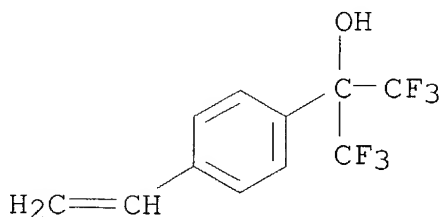
CMF C17 H24 O2



CM 2

CRN 2386-82-5

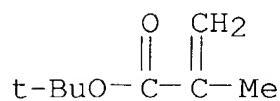
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



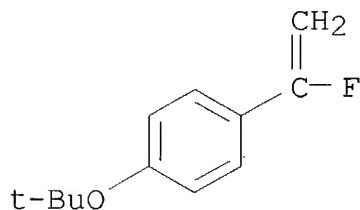
RN 485390-49-6 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
1-(1,1-dimethylethoxy)-4-(1-fluoroethenyl)benzene and  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 485390-48-5

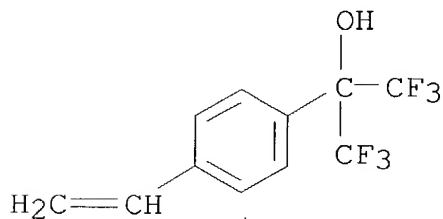
CMF C12 H15 F O



CM 2

CRN 2386-82-5

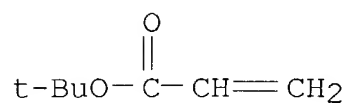
CMF C11 H8 F6 O



CM 3

CRN 1663-39-4

CMF C7 H12 O2



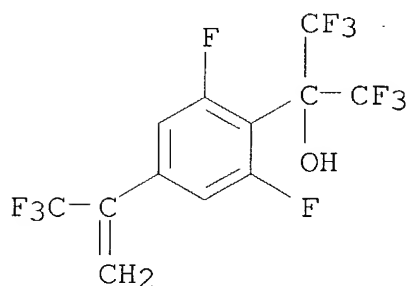
RN 485390-56-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 2,6-difluoro- $\alpha,\alpha$ -bis(trifluoromethyl)-4-[1-(trifluoromethyl)ethenyl]benzenemethanol and 1-[1-(4-ethenylphenoxy)-1-methylethyl]tricyclo[3.3.1.1<sup>3,7</sup>]decane (9CI) (CA INDEX NAME)

CM 1

CRN 430437-28-8

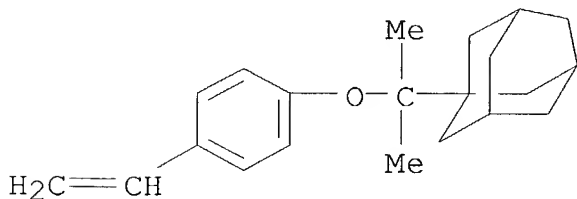
CMF C12 H5 F11 O



CM 2

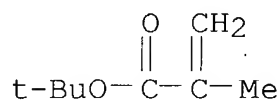
CRN 430437-25-5

CMF C21 H28 O



CM 3

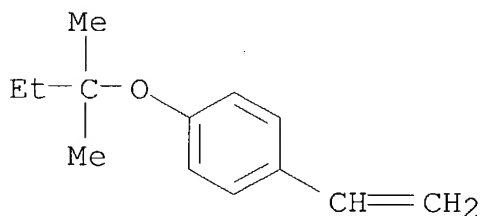
CRN 585-07-9  
CMF C8 H14 O2



RN 485390-57-6 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
1-(1,1-dimethylpropoxy)-4-ethenylbenzene and 4-ethenyl-  
 $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX  
NAME)

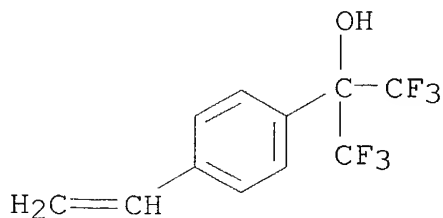
CM 1

CRN 146716-59-8  
CMF C13 H18 O



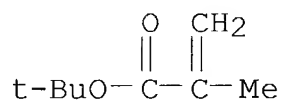
CM 2

CRN 2386-82-5  
CMF C11 H8 F6 O



CM 3

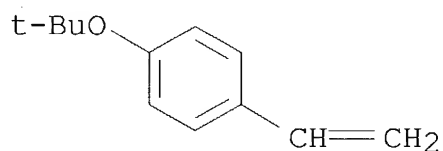
CRN 585-07-9  
CMF C8 H14 O2



RN 485390-64-5 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
1-(1,1-dimethylethoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -  
bis(trifluoromethyl)benzenemethanol and 2-methyl-2-propenenitrile  
(9CI) (CA INDEX NAME)

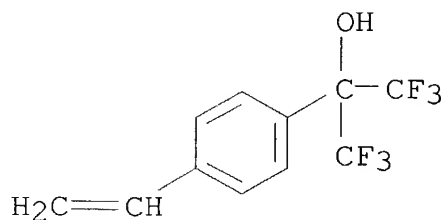
CM 1

CRN 95418-58-9  
CMF C12 H16 O



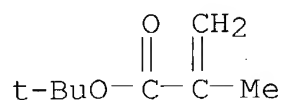
CM 2

CRN 2386-82-5  
CMF C11 H8 F6 O



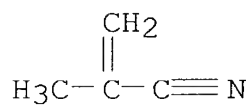
CM 3

CRN 585-07-9  
CMF C8 H14 O2



CM 4

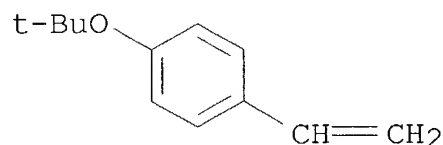
CRN 126-98-7  
CMF C4 H5 N



RN 485390-66-7 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
1-(1,1-dimethylethoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -  
bis(trifluoromethyl)benzenemethanol and 4-(1-methylethenyl)phenol  
(9CI) (CA INDEX NAME)

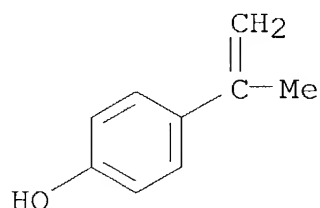
CM 1

CRN 95418-58-9  
CMF C12 H16 O



CM 2

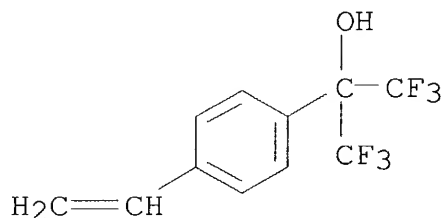
CRN 4286-23-1  
CMF C9 H10 O



CM 3

CRN 2386-82-5

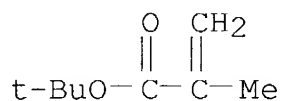
CMF C11 H8 F6 O



CM 4

CRN 585-07-9

CMF C8 H14 O2



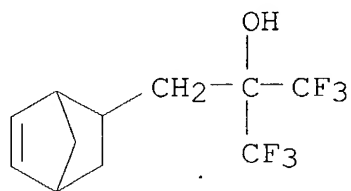
RN 485390-68-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 $\alpha,\alpha$ -bis(trifluoromethyl)bicyclo[2.2.1]hept-5-ene-2-  
 ethanol, 1-(1,1-dimethylethoxy)-4-ethenylbenzene and  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

CM 1

CRN 196314-61-1

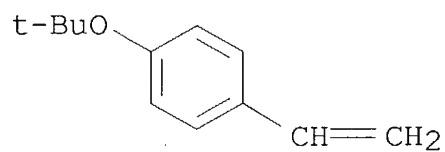
CMF C11 H12 F6 O



CM 2

CRN 95418-58-9

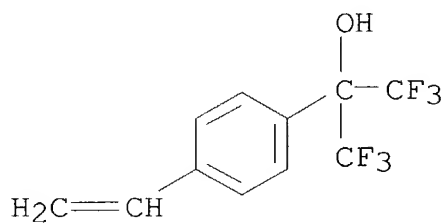
CMF C12 H16 O



CM 3

CRN 2386-82-5

CMF C11 H8 F6 O

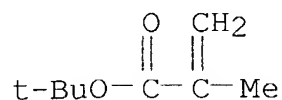


CM 4

CRN 585-07-9

CMF C8 H14 O2





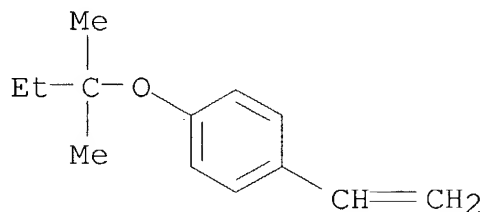
RN 485390-69-0 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
 1-(1,1-dimethylpropoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -  
 bis(trifluoromethyl)benzenemethanol and 2-methyl-2-propenenitrile  
 (9CI) (CA INDEX NAME)

CM 1

CRN 146716-59-8

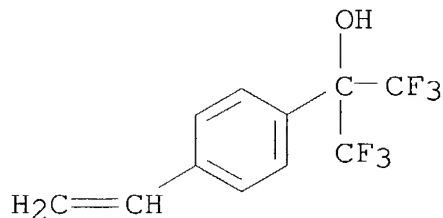
CMF C13 H18 O



CM 2

CRN 2386-82-5

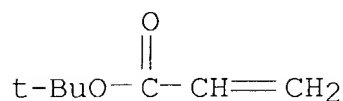
CMF C11 H8 F6 O



CM 3

CRN 1663-39-4

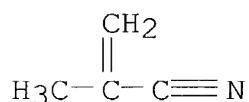
CMF C7 H12 O2



CM 4

CRN 126-98-7

CMF C4 H5 N



IC ICM G03F007-039

ICS C08F212-14; C08F220-18; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 35

ST UV **photoresist** compn resinIT Positive **photoresists**

(vacuum UV-sensitive; pos.-working vacuum UV-sensitive  
**photoresist** material compn. contg. specific resin)

IT 485390-41-8P 485390-42-9P 485390-43-0P **485390-44-1P**  
485390-45-2P 485390-46-3P 485390-47-4P **485390-49-6P**  
485390-51-0P 485390-52-1P 485390-54-3P 485390-55-4P  
**485390-56-5P 485390-57-6P** 485390-58-7P  
485390-60-1P 485390-62-3P 485390-63-4P **485390-64-5P**  
485390-65-6P **485390-66-7P** 485390-67-8P  
**485390-68-9P 485390-69-0P** 485390-70-3P  
485390-72-5P 485390-73-6P 485390-76-9P

(resin; pos.-working vacuum UV-sensitive **photoresist**  
material compn. contg. specific resin)

L23 ANSWER 13 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

2003:20985 Document No. 138:98193 Positive **resist**

composition. Mizutani, Kazuyoshi; Kanna, Shinichi (Fuji Photo Film  
Co., Ltd., Japan). Eur. Pat. Appl. EP 1273969 A2 20030108, 93 pp.

DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI,  
LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
EE, SK. (English). CODEN: EPXXDW. APPLICATION: EP 2002-14079  
20020701. PRIORITY: JP 2001-202240 20010703; JP 2001-202242  
20010703; JP 2001-202243 20010703.

AB A pos. **resist** compn. comprises (A) a resin which comprises a specified repeating units and (B) a compd. capable of generating an acid upon irradiation with one of an actinic ray and a radiation. The present invention relates to a pos. **resist** compn. capable of forming fine patterns with use of a vacuum UV ray having a wavelength  $\leq 160$  nm.

IT 483348-68-1P 483348-81-8P  
(pos. **resist** compn. for vacuum UV photolithog. contg.)

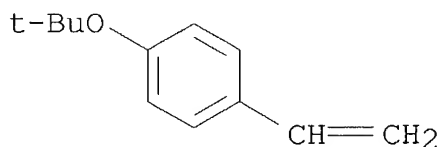
RN 483348-68-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 1-(1,1-dimethylethoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and phenyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 95418-58-9

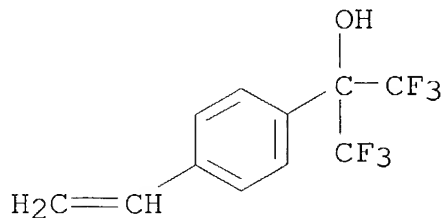
CMF C12 H16 O



CM 2

CRN 2386-82-5

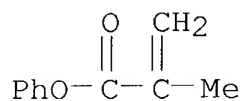
CMF C11 H8 F6 O



CM 3

CRN 2177-70-0

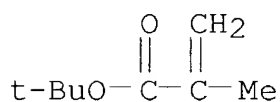
CMF C10 H10 O2



CM 4

CRN 585-07-9

CMF C8 H14 O2



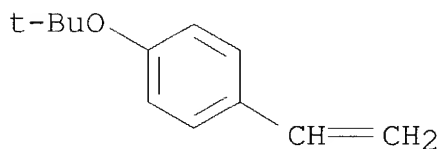
RN 483348-81-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 1-(1,1-dimethylethoxy)-4-ethenylbenzene, 4-ethenyl- $\alpha,\alpha$ -  
 bis(trifluoromethyl)benzenemethanol and 3,3,4,4,5,5,6,6,6-  
 nonafluorohexyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 95418-58-9

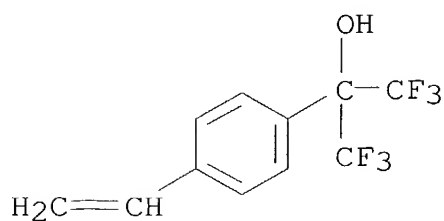
CMF C12 H16 O



CM 2

CRN 2386-82-5

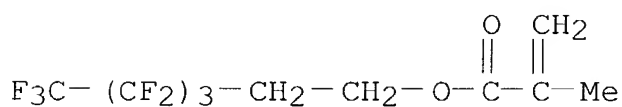
CMF C11 H8 F6 O



CM 3

CRN 1799-84-4

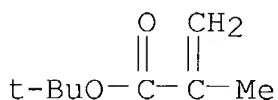
CMF C10 H9 F9 O2



CM 4

CRN 585-07-9

CMF C8 H14 O2



IC ICM G03F007-004  
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 35, 38  
 ST pos **photoresist** resin compn photolithog  
 IT Positive **photoresists**  
 (pos. **resist** compn. for vacuum UV photolithog.)  
 IT Polysiloxanes, uses  
 (surfactant; pos. **resist** compn. for vacuum UV  
 photolithog. contg.)  
 IT Photolithography  
 (vacuum UV; pos. **resist** compn. for vacuum UV)  
 IT 430437-22-2P 430437-35-7P 479073-24-0P 483348-64-7P  
 483348-65-8P 483348-66-9P 483348-67-0P **483348-68-1P**

483348-69-2P 483348-70-5P 483348-71-6P 483348-72-7P  
 483348-73-8P 483348-74-9P 483348-75-0P 483348-76-1P  
 483348-78-3P 483348-80-7P **483348-81-8P** 483348-83-0P  
 483348-85-2P 483348-86-3P 483348-88-5P 483348-90-9P  
 483348-91-0P 483348-92-1P 483348-93-2P 483348-94-3P  
 483348-96-5P 483348-97-6P 483348-98-7P 483348-99-8P  
 483349-01-5P 483349-02-6P 483349-04-8P 483349-06-0P  
 483349-08-2P 483349-10-6P 483349-11-7P 483349-12-8P  
 483349-13-9P 483349-15-1P 483349-16-2P

(pos. **resist** compn. for vacuum UV photolithog. contg.)

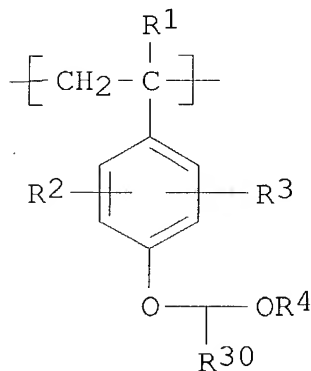
IT 9016-45-9, Polyoxyethylene nonyl phenyl ether 137462-24-9, Megafac  
 F 176 216679-67-3, Megafac R 08

(surfactant; pos. **resist** compn. for vacuum UV  
 photolithog. contg.)

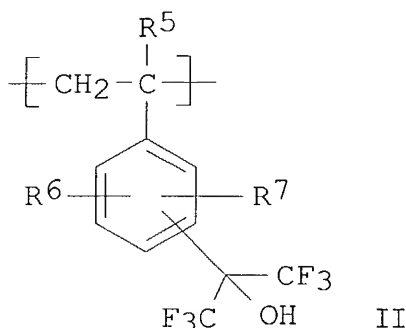
L23 ANSWER 14 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

2002:901555 Document No. 138:9654 Positive-working **resist**  
 resin composition containing specific resin. Kanna, Shinichi;  
 Mizutani, Kazuyoshi (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai  
 Tokkyo Koho JP 2002341543 A2 20021127, 37 pp. (Japanese). CODEN:  
 JKXXAF. APPLICATION: JP 2001-151101 20010521.

GI



I



II

AB The title compn. contains a resin increasing the soly. toward an alkali developer by reacting with an acid, and an actinic ray- or radiation-sensitive acid-generator, wherein the resin contains repeating unit I or II ( R2, R5 = H, F, alkyl; R2-3,6-7 = H, hydroxyl, halo, cyano, etc.; R4 = alkyl, acyl, alkoxy carbonyl). The compn. provides the **photoresist** precursors, which is suitable exposure with F2 excimer laser and shows the good soly. contrast.

IT **476630-25-8**

(resin; pos.-working **resist** resin compn.)

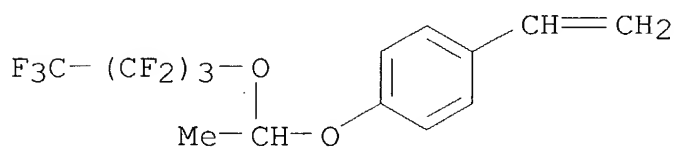
RN 476630-25-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol,  
 1-ethenyl-4-[1-(nonafluorobutoxy)ethoxy]benzene and  
 2-methyl-2-propenamide (9CI) (CA INDEX NAME)

CM 1

CRN 476630-22-5

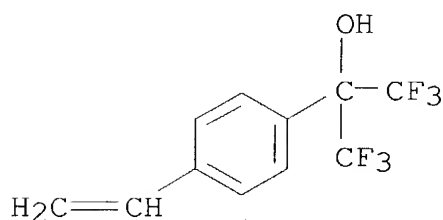
CMF C14 H11 F9 O2



CM 2

CRN 2386-82-5

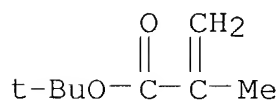
CMF C11 H8 F6 O



CM 3

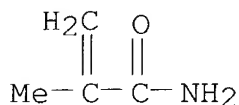
CRN 585-07-9

CMF C8 H14 O2



CM 4

CRN 79-39-0  
CMF C4 H7 N O



- IC ICM G03F007-039  
ICS C08F212-14; H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 35
- ST **photoresists**
- IT Positive **photoresists**  
(pos.-working **resist** resin compn.)
- |    |                    |             |             |             |             |
|----|--------------------|-------------|-------------|-------------|-------------|
| IT | 430437-13-1        | 430437-14-2 | 430437-17-5 | 476630-10-1 | 476630-11-2 |
|    | 476630-12-3        | 476630-13-4 | 476630-14-5 | 476630-15-6 | 476630-16-7 |
|    | 476630-17-8        | 476630-19-0 | 476630-21-4 | 476630-23-6 | 476630-24-7 |
|    | <b>476630-25-8</b> | 476630-26-9 | 476630-27-0 | 476630-28-1 |             |
|    | 476630-29-2        | 476630-30-5 | 476630-31-6 | 476630-32-7 | 476646-86-3 |
- (resin; pos.-working **resist** resin compn.)
- L23 ANSWER 15 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2002:850191 Document No. 137:360314 Fluorine-containing styrene acrylate copolymers and use thereof in lithographic **photoresist** compositions. Allen, Robert David; Brock, Phillip Joe; Ito, Hiroshi; Wallraff, Gregory Michael (International Business Machines Corporation, USA). U.S. Pat. Appl. Publ. US 2002164538 A1 20021107, 18 pp. (English). CODEN: USXXCO.  
APPLICATION: US 2001-794466 20010226.
- AB Copolymers are prepd. by radical polymn. of a fluorine-contg. arom. monomer and an acrylate-based comonomer that may or may not be fluorinated. The polymers are useful in lithog. **photoresist** compns., particularly chem. amplification **resists**. The polymers are substantially transparent to deep UV (DUV) radiation, i.e., radiation of a wavelength < 250 nm, including 157 nm and 248 nm radiation, and are thus useful in DUV lithog. **photoresist** compns.. A method for using the compn. to generate **resist** images on a substrate is also provided, i.e., in the manuf. of integrated circuits or the like.
- IT **370866-15-2P**, p-(Hexafluoro-2-hydroxypropyl)styrene-tert-butyl methacrylate copolymer  
(fluorine-contg. styrene acrylate copolymers for lithog. **photoresist** compns.)
- RN 370866-15-2 HCAPLUS

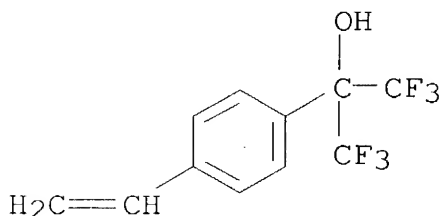


CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 2386-82-5

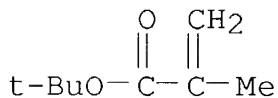
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

CMF C8 H14 O2



IC ICM G03F007-038

ICS G03F007-20; G03F007-26

NCL 430270100

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 35, 38, 76

ST **photoresist** fluorine contg styrene acrylate copolymers  
lithog integrated circuit

IT Photolithography  
(UV vacuum; fluorine-contg. styrene acrylate copolymers and use  
thereof in lithog. **photoresist** compns.)

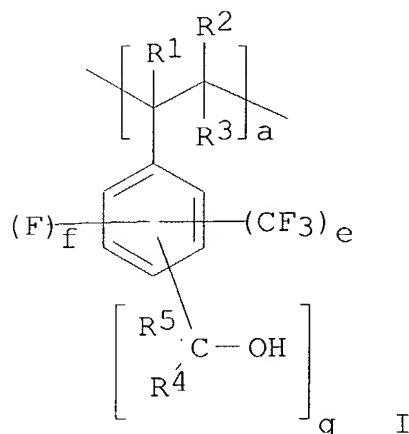
IT **Photoresists**  
(fluorine-contg. styrene acrylate copolymers and use thereof in  
lithog. **photoresist** compns.)

IT Semiconductor device fabrication  
(fluorine-contg. styrene acrylate copolymers for lithog.  
**photoresist** compns.)

- IT 370866-13-0P, tert-Butyl  $\alpha$ -trifluoromethylacrylate-p-  
(Hexafluoro-2-hydroxypropyl)styrene copolymer **370866-15-2P**  
, p-(Hexafluoro-2-hydroxypropyl)styrene-tert-butyl methacrylate  
copolymer  
(fluorine-contg. styrene acrylate copolymers for lithog.  
**photoresist** compns.)
- IT 474635-14-8P 474635-15-9P 474635-16-0P 474635-17-1P  
(fluorine-contg. styrene acrylate copolymers for lithog.  
**photoresist** compns.)
- IT 240435-11-4  
(photoacid generator; fluorine-contg. styrene acrylate copolymers  
for lithog. **photoresist** compns.)
- IT 335-08-0P, 1,1,1-Trifluoroacetone cyanohydrin 381-84-0P,  
2-(Trifluoromethyl)acrylonitrile 382-90-1P, Methyl  
 $\alpha$ -(trifluoromethyl)acrylate  
(prepn. of fluorine-contg. styrene acrylate copolymers for  
lithog. **photoresist** compns.)
- IT 75-65-0, t-Butanol, reactions 79-37-8, Oxalyl chloride 108-24-7,  
Acetic anhydride 143-33-9, Sodium cyanide 421-50-1,  
1,1,1-Trifluoroacetone 684-16-2, Hexafluoroacetone 2039-82-9,  
4-Bromostyrene  
(prepn. of fluorine-contg. styrene acrylate copolymers for  
lithog. **photoresist** compns.)
- IT 337-16-6P 381-98-6P, 2-(Trifluoromethyl)acrylic acid 382-43-4P,  
3-Hydroxy-2-(Trifluoromethyl)propionic acid 2386-82-5P  
4588-51-6P 105935-24-8P  
(prepn. of fluorine-contg. styrene acrylate copolymers for  
lithog. **photoresist** compns.)

L23 ANSWER 16 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2002:847803 Document No. 137:360305 Polymers with fluorinated  
styrene-based mer units, their positive **resist** materials,  
and their patterning. Hatakeyama, Jun; Harada, Yuji; Watanabe,  
Atsushi; Sasako, Masaru; Endo, Masataka; Kishimura, Shinji; Otani,  
Mitsutaka; Miyazawa, Satoru; Tsutsumi, Kentaro; Maeda, Kazuhiko  
(Shin-Etsu Chemical Industry Co., Ltd., Japan; Matsushita Electric  
Industrial Co., Ltd.; Central Glass Co., Ltd.). Jpn. Kokai Tokkyo  
Koho JP 2002322217 A2 20021108, 28 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 2001-128529 20010426.

GI



AB The polymers for **resist** materials contain fluorinated styrene-based mer units I (R1 = H, F, C1-20 alkyl which may be fluorinated; R4, R5 = H, F, C1-4 alkyl which may be fluorinated; R4 and/or R5 contain  $\geq 1$  F;  $0 \leq e < 5$ ,  $f = 0-5$ ,  $g = 1-5$ ,  $0 < e + f < 5$ ,  $a > 0$ ) and mer units whose H of CO<sub>2</sub>H or OH are substituted with acid-labile groups. Chem. amplified **resist** materials contain the polymers, org. solvents, acid generators, and optionally basic compds. and dissoln. inhibitors. The **resist** materials are patterned by using high-energy ray of wavelength  $\leq 300$  nm or electron beams, esp. 100-180 nm DUV, 1-30 nm soft x-ray, or electron beams. The **resist** materials have good F2 transmittance, dry etching resistance, and suppressed decrease in dissoln. rate of unexposed sites by high dose.

IT 474088-23-8P 474088-26-1P 474088-28-3P

(polymers with fluorinated styrene-based mer units, their pos. DUV **resist** materials, and their patterning)

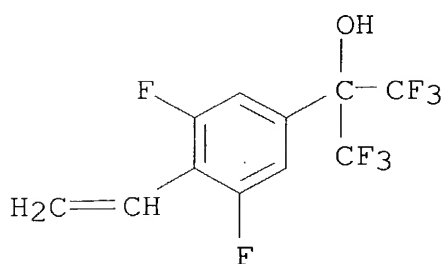
RN 474088-23-8 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with 4-ethenyl-3,5-difluoro- $\alpha,\alpha$ -bis(trifluoromethyl)benzeneme thanol (9CI) (CA INDEX NAME)

CM 1

CRN 474088-22-7

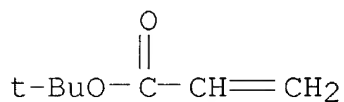
CMF C11 H6 F8 O



CM 2

CRN 1663-39-4

CMF C7 H12 O2



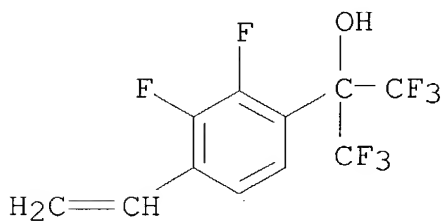
RN 474088-26-1 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
4-ethenyl-2,3-difluoro- $\alpha,\alpha$ -bis(trifluoromethyl)benzeneme  
thanol (9CI) (CA INDEX NAME)

CM 1

CRN 474088-25-0

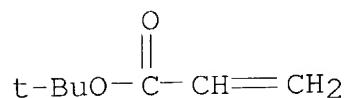
CMF C11 H6 F8 O



CM 2

CRN 1663-39-4

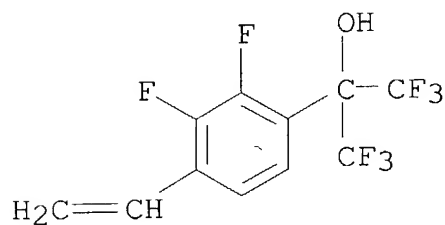
CMF C7 H12 O2



RN 474088-28-3 HCAPLUS  
CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
4-ethenyl-2,3-difluoro- $\alpha,\alpha$ -bis(trifluoromethyl)benzeneme  
thanol and ethenylpentafluorobenzene (9CI) (CA INDEX NAME)

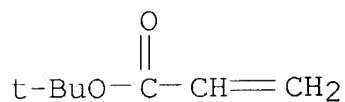
CM 1

CRN 474088-25-0  
CMF C11 H6 F8 O



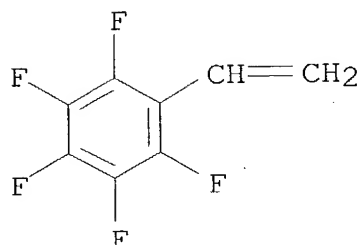
CM 2

CRN 1663-39-4  
CMF C7 H12 O2



CM 3

CRN 653-34-9  
CMF C8 H3 F5



- IC ICM C08F212-14  
ICS C08F216-12; C08F220-10; C08F222-10; C08F222-40; C08F230-08;  
G03F007-039
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)
- ST fluorinated styrene polymer chem amplified **resist**; pos DUV  
**resist** fluorinated styrene polymer; electron beam  
**resist** pos fluorinated styrene polymer;  
hexafluoroisopropanol substituted styrene polymer DUV **resist**
- IT Amines, uses  
(base; polymers with fluorinated styrene-based mer units, their  
pos. DUV **resist** materials, and their patterning)
- IT Positive **photoresists**  
(polymers with fluorinated styrene-based mer units, their pos.  
DUV **resist** materials, and their patterning)
- IT Electron beam **resists**  
(pos.-working; polymers with fluorinated styrene-based mer units,  
their pos. DUV **resist** materials, and their patterning)
- IT 102-71-6, Triethanolamine, uses 70384-51-9 139254-88-9  
(base; polymers with fluorinated styrene-based mer units, their  
pos. DUV **resist** materials, and their patterning)
- IT 102-82-9, Tributylamine  
(dissoln. inhibitor; polymers with fluorinated styrene-based mer  
units, their pos. DUV **resist** materials, and their  
patterning)
- IT 258342-00-6  
(photoacid generator; polymers with fluorinated styrene-based mer  
units, their pos. DUV **resist** materials, and their  
patterning)
- IT 474088-23-8P 474088-24-9P 474088-26-1P  
474088-28-3P  
(polymers with fluorinated styrene-based mer units, their pos.  
DUV **resist** materials, and their patterning)

chemically amplified **resist**. Chung, Yoon-Sik; Kim, Hyun-Jin; Cho, Sook Hee; Lee, Dong Hwal; Im, Kwang Hwui; Yim, Yun-Gill; Kim, Deog-Bae; Kim, Jae-Hyun (Electron. Mater. Div., DongJin Semichem Co., Ltd., Hwasung-Kun Kyungki-do, 445-930, S. Korea). Proceedings of SPIE-The International Society for Optical Engineering, 4690(Pt. 2, Advances in Resist Technology and Processing XIX), 660-670 (English) 2002. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB Various derivs. of modified poly(4-hydroxystyrene-4-(1-ethylethoxystyrene))(M-EEPHS) were synthesized by insertion of third monomer unit such as styrene, 4-acetoxystyrene, 4-methoxycarbonyloxystyrene, tert-butoxycarbonyloxystyrene, tert-Bu acrylate, and 4-(1-cyclohexylethoxy)styrene. Their dissoln. rate behavior was investigated with different blocking level. From the av. dissoln. rate of M-EEPHS in a 2.38 wt% TMAH soln. as a function of the total protection %, hydrophobicity was proven as more influential factor for the dissoln. inhibition rather than hydrogen bonding by ester or carbonate functionality in a blocking group. To study structural effect on KrF lithog. performance, **resists** contg. M-EEPHS were formulated and testified. Defects that are found in EEPHS based **resist**, such as LER (line edge roughness) and top surface erosion at defocus can be solved by incorporation of carbamate, bulky acetal functionality or dissoln. inhibition group. When hybrid system, which contained both M-EEPHS and poly[4-hydroxystyrene-tert-Bu acrylate-4-(3-cyano-1,5-di-tert-Bu carbonyl pentyl styrene)](P(HS-TBA-CBPS)) as an annealing type resin, were compared with the lithog. results of single polymeric system (M-EEPHS only), their performances were directly projected to those of blends of high activation type and low activation type resin.

IT 328238-42-2

(blending resin; dissoln. rate and lithog. characteristics of deep-UV chem. amplified **photoresists** based on blend of polymers including structurally modified poly(p-hydroxystyrene))

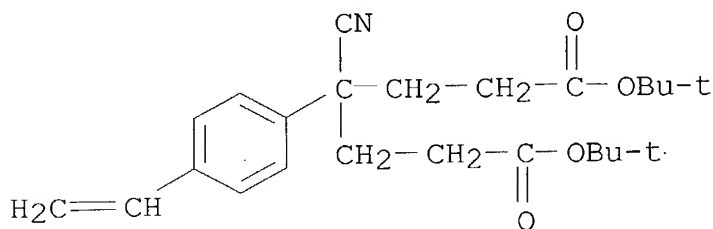
RN 328238-42-2 HCAPLUS

CN Heptanedioic acid, 4-cyano-4-(4-ethenylphenyl)-, bis(1,1-dimethylethyl) ester, polymer with 1,1-dimethylethyl 2-propenoate and 4-ethenylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 328238-41-1

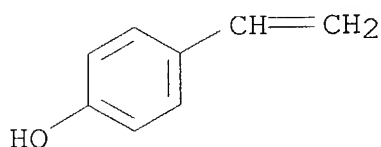
CMF C24 H33 N O4



CM 2

CRN 2628-17-3

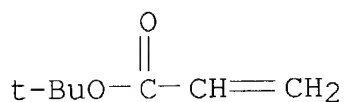
CMF C8 H8 O



CM 3

CRN 1663-39-4

CMF C7 H12 O2



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST acetal type polymer deep UV lithog chem amplified  
**photoresist**; polyhydroxystyrene structural modification deep  
 UV lithog chem amplified **photoresist**

IT **Photoresists**  
 (deep-UV, chem. amplified; dissoln. rate and lithog.  
 characteristics of deep-UV chem. amplified **photoresists**  
 based on structurally modified poly(p-hydroxystyrene))

IT Dissolution  
 (kinetics; dissoln. rate and lithog. characteristics of deep-UV  
 chem. amplified **photoresists** based on structurally  
 modified poly(p-hydroxystyrene))



- IT Molecular structure-property relationship  
Protective groups  
(lithog. characteristics of deep-UV chem. amplified  
**photoresists** based on structurally modified  
poly(p-hydroxystyrene))
- IT Protective groups  
(tert-butoxycarbonyl; lithog. characteristics of deep-UV chem.  
amplified **photoresists** based on structurally modified  
poly(p-hydroxystyrene))
- IT 328238-42-2  
(blending resin; dissoln. rate and lithog. characteristics of  
deep-UV chem. amplified **photoresists** based on blend of  
polymers including structurally modified poly(p-hydroxystyrene))
- IT 75-59-2, Tetramethyl ammonium hydroxide  
(developer; dissoln. rate and lithog. characteristics of deep-UV  
chem. amplified **photoresists** based on structurally  
modified poly(p-hydroxystyrene))
- IT 108-24-7D, Acetic anhydride, reaction products with  
poly(4-hydroxystyrene) reacted with Et vinyl ether 109-92-2D,  
Ethyl vinyl ether, reaction products with poly(hydroxystyrene) and  
blocking groups providing compds. 2182-55-0D, Cyclohexyl vinyl  
ether, reaction products with poly(4-hydroxystyrene) reacted with Et  
vinyl ether 4525-33-1D, Dimethyl pyrocarbonate, reaction products  
with poly(4-hydroxystyrene) reacted with Et vinyl ether  
24424-99-5D, Di-tert-butyl dicarbonate, reaction products with  
poly(4-hydroxystyrene) reacted with Et vinyl ether 24979-70-2D,  
Poly(4-hydroxystyrene), reaction products with Et vinyl ether and  
blocking groups providing compds. 24979-74-6D,  
Poly(4-hydroxystyrene-styrene), reaction products with Et vinyl  
ether and blocking groups providing compds. 159296-87-4D,  
Poly(4-hydroxystyrene-tert-butyl acrylate), reaction products with  
Et vinyl ether and blocking groups providing compds.  
(dissoln. rate and lithog. characteristics of deep-UV chem.  
amplified **photoresists** contg. structurally modified  
poly(p-hydroxystyrene))
- IT 84540-57-8, Propylene glycol monomethyl ether acetate  
(solvent; dissoln. rate and lithog. characteristics of deep-UV  
chem. amplified **photoresists** based on structurally  
modified poly(p-hydroxystyrene))

L23 ANSWER 18 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2002:799428 Document No. 139:76209 Synergic effect of acetal-based  
resin by blending with poly[4-hydroxystyrene-co-tert-butyl  
acrylate-co-4-(3-cyano-1,5-di-tert-butyl carbonylpentylstyrene  
(P(HS-TBA-CBPS)) on the profiles of 248 nm chemically amplified  
**resist**. Kim, Hyun-Jin; Chung, Yoon-Sik; Lee, Dong Hwal;  
Cho, Sook Hee; Im, Kwang Hwui; Yim, Yun-Gill; Kim, Deog-Bae; Kim,  
Jae-Hyun (Electron. Mater. Div., DongJin Semichem Co., Ltd.,

Kwasung-Kun Kyungki-do, 445-930, S. Korea). Proceedings of SPIE-The International Society for Optical Engineering, 4690(Pt. 2, Advances in Resist Technology and Processing XIX), 651-659 (English) 2002. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB The authors prepd. terpolymer of p-hydroxystyrene, tert-Bu acrylate and 4-(3-cyano-1,5-di-tert-butylcarbonylpentylstyrene) (P(HS-TBA-CBPS)) and discussed a characteristic of prepd. polymer. As TBA, newly introduced monomer increases, contrast of **resist** is improved. And the prepd. polymer was blended with poly(4-hydroxystyrene-co-4-(1-ethylethoxystyrene)) (EE-PHS). The synergic effect on a **resist** performance in KrF lithog. by the combination of high and low activation energy system was shown. A **resist** using blending polymer was shown a good performance on resoln. and LER (line edge roughness) than **resist** using polymer sep. Based on the results, it was found that high performance KrF **resist** could be obtained by optimization of polymer blending.

IT 328238-42-2P  
(lithog. properties of deep-UV chem. amplification  
photoresist contg. polymer blend of hydroxystyrene  
terpolymer and hydroxystyrene copolymer)

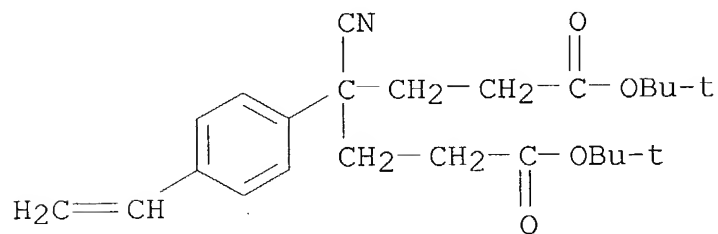
RN 328238-42-2 HCAPLUS

CN Heptanedioic acid, 4-cyano-4-(4-ethenylphenyl)-,  
bis(1,1-dimethylethyl) ester, polymer with 1,1-dimethylethyl  
2-propenoate and 4-ethenylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 328238-41-1

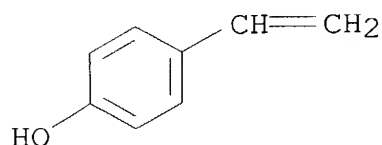
CMF C24 H33 N O4



CM 2

CRN 2628-17-3

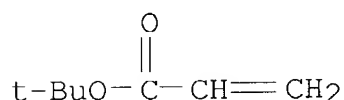
CMF C8 H8 O



CM 3

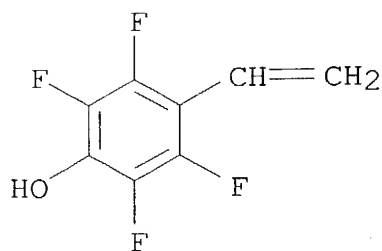
CRN 1663-39-4

CMF C7 H12 O2



- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST deep UV lithog chem amplification **photoresist** polymer blend; hydroxystyrene tertbutyl acrylate cyanotertbutylcarbonylpentylstyrene terpolymer blend ethylethoxystyrene copolymer
- IT **Photoresists**  
 (deep-UV, chem. amplification; lithog. properties of chem. amplification **photoresist** for KrF lithog. contg. polymer blend of hydroxystyrene terpolymer and hydroxystyrene copolymer)
- IT Polymer blends  
 (lithog. properties of deep-UV chem. amplification **photoresist** contg. polymer blend of hydroxystyrene terpolymer and hydroxystyrene copolymer)
- IT Polydispersity  
 Polymerization  
 (polymn. reaction in synthesis of terpolymer for use in deep-UV chem. amplification **photoresist** based on polymer blend)
- IT 84540-57-8, Propylene glycol monomethyl ether acetate  
 (casting solvent; lithog. properties of deep-UV chem. amplification **photoresist** contg. polymer blend of hydroxystyrene terpolymer and hydroxystyrene copolymer)
- IT 75-59-2, Tetramethylammonium hydroxide  
 (developer; lithog. properties of deep-UV chem. amplification **photoresist** contg. polymer blend of hydroxystyrene terpolymer and hydroxystyrene copolymer)
- IT 24979-70-2DP, 4-Hydroxystyrene homopolymer, reaction product with Et vinyl ether 328238-42-2P

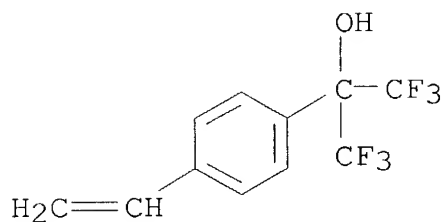
- (lithog. properties of deep-UV chem. amplification  
**photoresist** contg. polymer blend of hydroxystyrene  
terpolymer and hydroxystyrene copolymer)
- IT 1663-39-4, Tert-Butyl acrylate 2628-16-2, 4-Acetoxystyrene  
328238-41-1  
(polymn. reaction in synthesis of terpolymer for use in deep-UV  
chem. amplification **photoresist** based on polymer blend)
- L23 ANSWER 19 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2002:799413 Document No. 139:60268 Investigation of a fluorinated  
ESCAP-based **resist** for 157-nm lithography. Cho, Sungseo;  
Klauck-Jacobs, Axel; Yamada, Shintaro; Xu, Cheng-Bai; Leonard,  
JoAnne; Zampini, Anthony (Air Products and Chemicals, Marlborough,  
MA, 01752, USA). Proceedings of SPIE-The International Society for  
Optical Engineering, 4690(Pt. 1, Advances in Resist Technology and  
Processing XIX), 522-532 (English) 2002. CODEN: PSISDG. ISSN:  
0277-786X. Publisher: SPIE-The International Society for Optical  
Engineering.
- AB A survey of fluorine-contg. arom. polymers, with and without base  
sol. functionality, was conducted to det. their potential utility in  
157 nm lithog. The focus was toward the design and evaluation of  
fluorine- contg. polymers that closely paralleled the ESCAP matrix  
resins now successfully used in 248 nm **photoresists**. New  
4- hydroxytetrafluorostyrene (HTFS) based homo-, co- and ter-  
polymers were prepd. and evaluated for their potential utility at  
157 nm **resists**. Significant advances were made toward  
reducing absorbance with fluorine substitution and monomer  
variation. The polymers form good films, have acceptable thermal  
stability and show good dry etch resistance with promising potential  
in thin film **resist** applications. The synthesis and  
pertinent characteristics of the new polymer systems as well as  
preliminary oxide etch results on representative polymers are  
discussed.
- IT 546124-86-1P  
(investigation of fluorinated ESCAP-based **resist** for  
157-nm lithog.)
- RN 546124-86-1 HCAPLUS
- CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
4-ethenyl-2,3,5,6-tetrafluorophenol (9CI) (CA INDEX NAME)
- CM 1
- CRN 385422-30-0
- CMF C8 H4 F4 O



CM 2

CRN 2386-82-5

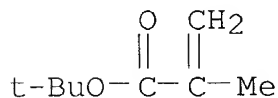
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38

ST fluorinated ESCAP **resist** 157 nm lithog

IT Photolithography

**Photoresists**

(investigation of fluorinated ESCAP-based **resist** for 157-nm lithog.)

IT 9016-83-5P, Cresol-formaldehyde copolymer 24936-47-8P

24979-70-2P, Poly(4-hydroxystyrene) 26838-55-1P 29993-87-1P  
 30940-23-9P 31287-32-8P 37604-40-3P, 3,5-  
 Bis(trifluoromethyl)phenol-formaldehyde copolymer 77884-23-2P  
 77884-24-3P 77884-32-3P 116352-29-5P 403814-65-3P  
 403814-66-4P 403814-68-6P 403814-72-2P 403814-74-4P  
 546124-77-0P 546124-79-2P 546124-81-6P 546124-82-7P  
 546124-83-8P 546124-84-9P **546124-86-1P** 546124-88-3P

(investigation of fluorinated ESCAP-based **resist** for  
 157-nm lithog.)

IT 653-34-9, Pentafluorostyrene  
 (prepn. of fluorinated ESCAP-based **resist** for 157-nm  
 lithog.)

IT 385422-30-0P, 4-Hydroxy-2,3,5,6-tetrafluorostyrene  
 (prepn. of fluorinated ESCAP-based **resist** for 157-nm  
 lithog.)

L23 ANSWER 20 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

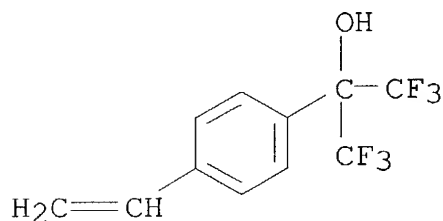
2002:799361 Document No. 138:392955 High-resolution fluorocarbon-based  
**resist** for 157-nm lithography. Fedynyshyn, Theodore H.;  
 Mowers, William A.; Kunz, Roderick R.; Sinta, Roger F.; Sworin,  
 Michael; Goodman, Russell B. (Lincoln Lab., MIT, Lexington, MA,  
 02420, USA). Proceedings of SPIE-The International Society for  
 Optical Engineering, 4690(Pt. 1, Advances in Resist Technology and  
 Processing XIX), 29-40 (English) 2002. CODEN: PSISDG. ISSN:  
 0277-786X. Publisher: SPIE-The International Society for Optical  
 Engineering.

AB Lithog. with 157 nm fluorine lasers is rapidly emerging as the next  
 evolutionary step in optical lithog. and is clearly seen as the  
 likely successor to 193 nm lithog. In fact, it may become the  
 technol. of choice for the sub-100-nm node features. The  
**photoresists** used for this technol. will be required to be  
 extendable to less than 70 nm. As has been demonstrated with the  
 transition to shorter wavelengths in the past, the  
**photoresist** materials that were developed for the longer  
 wavelength applications are too absorbent for practical use as  
 high-resoln. single layer **resist** with 157 nm radiation.  
 This high absorbency will force the coated **resist**  
 thicknesses to be well under 100 nm. Fluorine contg. polymers have  
 been demonstrated to be more transparent in this spectral region  
 than pure hydrocarbon polymers. The authors developed and evaluated  
 a no. of unique 4-hexafluoroisopropanolstyrene based polymer systems  
 which we previously termed FESCAP **resists** and have  
 developed new acetal partially blocked 4-  
 hexafluoroisopropanolstyrene based copolymers. These  
**resists** can have absorbencies of under 3  $\mu\text{m}^{-1}$  at 157 nm  
 which could allow imaging to thicknesses of 150 nm. The authors  
 recent **resist** designs are shown to have imaging capability  
 down to 70 nm with a 0.60 NA microstepper.

IT 397302-34-0  
 (properties and lithog. characterization of  
 hexafluoroisopropanolstyrene-based copolymers as  
**photoresists** for 157 nm fluorine laser lithog.)  
 RN 397302-34-0 HCAPLUS  
 CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

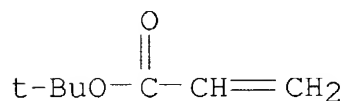
CM 1

CRN 2386-82-5  
 CMF C11 H8 F6 O



CM 2

CRN 1663-39-4  
 CMF C7 H12 O2



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 ST fluorocarbon based **photoresist** vacuum UV fluorine laser  
 lithog; fluoroisopropanolstyrene copolymer **photoresist**  
 vacuum UV fluorine laser lithog  
 IT **Photoresists**  
 (lithog. characterization of hexafluoroisopropanolstyrene-based  
 copolymers as **photoresists** for 157 nm fluorine laser  
 lithog.)  
 IT Etching  
 (plasma; lithog. characterization of hexafluoroisopropanolstyrene-  
 based copolymers as **photoresists** for 157 nm fluorine

- laser lithog.)
- IT 75-59-2, Tetramethylammonium hydroxide  
(developer; properties and lithog. characterization of hexafluoroisopropanolstyrene-based copolymers as **photoresists** for 157 nm fluorine laser lithog.)
- IT 7440-59-7, Helium, uses 7782-44-7, Oxygen, uses 7782-50-5, Chlorine, uses 10035-10-6, Hydrogen bromide, uses  
(polysilicon etching plasma; lithog. characterization of hexafluoroisopropanolstyrene-based copolymers as **photoresists** for 157 nm fluorine laser lithog.)
- IT 397302-34-0 459424-12-5 459424-15-8 479073-24-0  
(properties and lithog. characterization of hexafluoroisopropanolstyrene-based copolymers as **photoresists** for 157 nm fluorine laser lithog.)
- IT 7440-21-3, Silicon, uses  
(substrate; lithog. characterization of hexafluoroisopropanolstyrene-based copolymers as **photoresists** for 157 nm fluorine laser lithog.)
- IT 75-46-7, Trifluoromethane 75-73-0, Tetrafluoromethane 7440-37-1, Argon, uses  
(thermal oxide etch plasma; properties and lithog. characterization of hexafluoroisopropanolstyrene-based copolymers as **photoresists** for 157 nm fluorine laser lithog.)

L23 ANSWER 21 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2002:676321 Document No. 137:224116 Low absorbing **resists** for 157 nm photolithography. Fedynyshyn, Theodore H.; Kunz, Roderick R.; Sworin, Michael; Sinta, Roger (Massachusetts Institute of Technology, USA). PCT Int. Appl. WO 2002069043 A2 20020906, 43 pp. DESIGNATED STATES: W: CA, JP; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-US5472 20020222. PRIORITY: US 2001-791252 20010223.

AB The present invention provides **photoresist** materials for use in photolithog. at wavelengths less than about 248 nm. More particularly, the **photoresists** of the invention are particularly suited for use in 157 nm lithog. A **photoresist** compn. of the invention includes a polymer having at least one monomeric unit having an arom. moiety. The monomeric unit further includes at least a group, such as an electron withdrawing group, attached to the arom. moiety. The attached group includes at least one CF bond. The polymer further includes an acidic hydroxyl group. A **photoresist** compn. of the invention can have an absorbance in a range of 1-5  $\mu\text{m}^{-1}$  at 157 nm, rendering it particularly suitable for use as a single layer **resist** in 157 nm lithog.

IT 397302-34-0P 397302-57-7P 397302-62-4P  
397302-67-9P 397302-71-5P 457048-20-3P

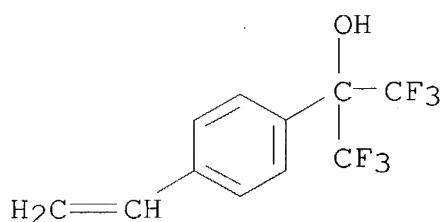


(low absorbing **resists** for 157 nm photolithog.)

RN 397302-34-0 HCAPLUS  
 CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

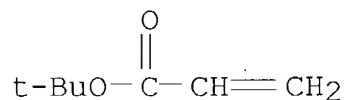
CM 1

CRN 2386-82-5  
 CMF C11 H8 F6 O



CM 2

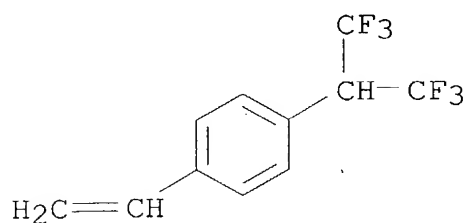
CRN 1663-39-4  
 CMF C7 H12 O2



RN 397302-57-7 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
 1-ethenyl-4-[2,2,2-trifluoro-1-(trifluoromethyl)ethyl]benzene (9CI)  
 (CA INDEX NAME)

CM 1

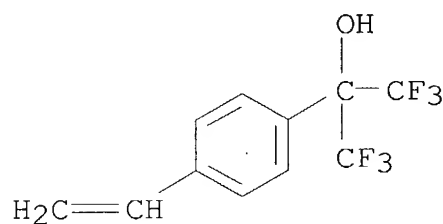
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 CMF C11 H8 F6



CM 2

CRN 2386-82-5

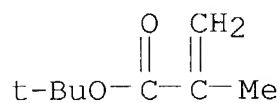
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



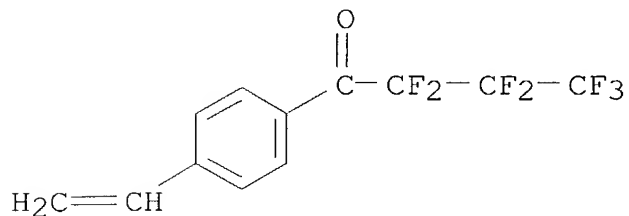
RN 397302-62-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
 1-(4-ethenylphenyl)-2,2,3,3,4,4,4-heptafluoro-1-butanone (9CI) (CA  
 INDEX NAME)

CM 1

CRN 74946-46-6

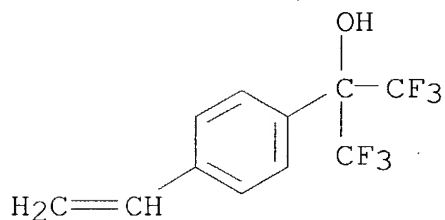
CMF C12 H7 F7 O



CM 2

CRN 2386-82-5

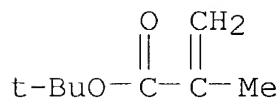
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



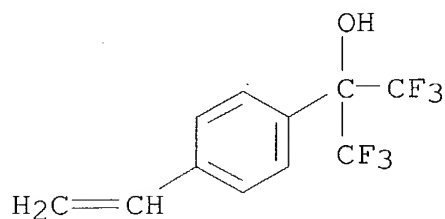
RN 397302-67-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 2386-82-5

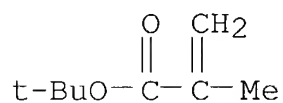
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

CMF C8 H14 O2



CM 3

CRN 107-13-1

CMF C3 H3 N



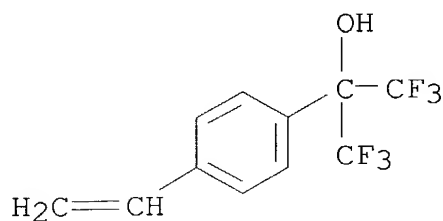
RN 397302-71-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
2-methyl-2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 2386-82-5

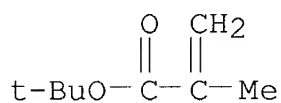
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

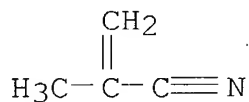
CMF C8 H14 O2



CM 3

CRN 126-98-7

CMF C4 H5 N



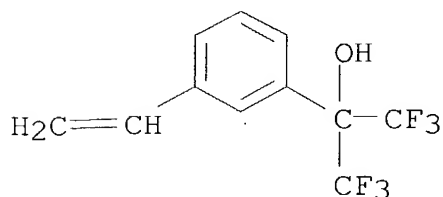
RN 457048-20-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
3-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 122056-08-0

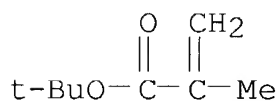
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

CMF C8 H14 O2



IT 370866-15-2P 397302-39-5P 397302-51-1P

(low absorbing **resists** for 157 nm photolithog.)

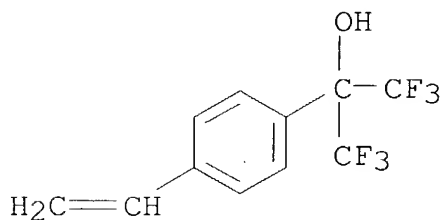
RN 370866-15-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 2386-82-5

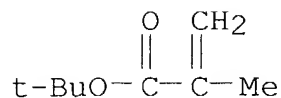
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

CMF C8 H14 O2



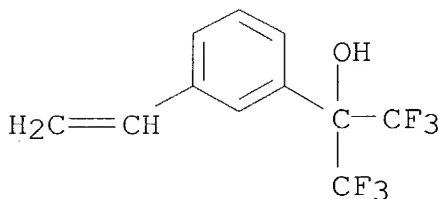
RN 397302-39-5 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
3-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 122056-08-0

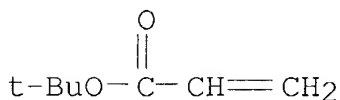
CMF C11 H8 F6 O



CM 2

CRN 1663-39-4

CMF C7 H12 O2



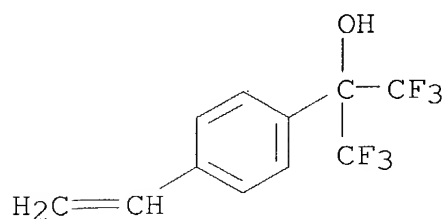
RN 397302-51-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
1-ethenyl-3,5-bis(trifluoromethyl)benzene and 4-ethenyl-  
 $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX  
NAME)

CM 1

CRN 2386-82-5

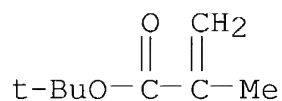
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

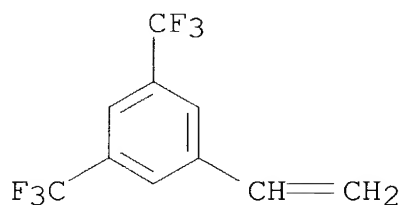
CMF C8 H14 O2



CM 3

CRN 349-59-7

CMF C10 H6 F6



IC ICM G03F007-039

ICS G03F007-004

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 38

ST **photoresist** UV compn fluoropolymer photolithog chem  
 amplified single layer

IT Photolithography

**Photoresists**(UV; low absorbing **resists** for 157 nm photolithog.)



- IT Fluoropolymers, properties  
(low absorbing **resists** for 157 nm photolithog.)
- IT 2052-49-5, Tetrabutyl ammonium hydroxide  
(base additive; low absorbing **resists** for 157 nm  
photolithog.)
- IT 2386-82-5P  
(in prepn. of **photoresists** materials)
- IT 59829-15-1P 74946-46-6P 120721-71-3P 122056-08-0P  
125431-52-9P 143336-93-0P 397302-06-6P 397302-17-9P  
457048-16-7P  
(in prepn. of **photoresists** materials)
- IT 107-30-2, Chloromethyl methyl ether 431-47-0, Methyl  
trifluoroacetate 684-16-2, Hexafluoroacetone 1020-31-1,  
3,5-Di-tert-butylcatechol 1712-70-5, p-Chloro- $\alpha$ -  
methylstyrene 2039-82-9, p-Bromostyrene  
(in prepn. of **photoresists** materials)
- IT 18120-63-3P 95499-54-0P  
(in prepn. of **photoresists** materials)
- IT 9003-53-6P, Poly(styrene) 24936-47-8P, Poly(4-fluorostyrene)  
25232-27-3P, Poly(tert-butyl acrylate) 26009-55-2P,  
Poly(4-tert-butyl styrene) 26838-55-1P, Poly(pentafluorostyrene)  
31287-32-8P 59269-51-1P, Poly(vinyl phenol) 77884-24-3P,  
Poly(4-trifluoromethyl styrene) 77884-32-3P 116352-29-5P  
122056-09-1P 125431-53-0P 143336-94-1P 370866-13-0P  
397302-12-4P 397302-18-0P 397302-23-7P 397302-29-3P  
397302-34-0P 397302-57-7P 397302-62-4P  
397302-67-9P 397302-71-5P 457048-18-9P  
457048-20-3P  
(low absorbing **resists** for 157 nm photolithog.)
- IT 370866-15-2P 397302-39-5P 397302-44-2P  
397302-51-1P  
(low absorbing **resists** for 157 nm photolithog.)
- IT 194861-06-8 218151-20-3  
(photoacid generator; low absorbing **resists** for 157 nm  
photolithog.)
- L23 ANSWER 22 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2002:633344 Document No. 138:63742 Fluoroaromatic **resists**  
for 157-nm lithography. Fedynyshyn, Theodore H.; Kunz, Roderick R.;  
Sinta, Roger F.; Sworin, Michael; Mowers, William A.; Goodman,  
Russell B.; Cabral, Alberto (Lincoln Laboratory, Massachusetts  
Institute of Technology, Lexington, MA, 02420, USA). Journal of  
Photopolymer Science and Technology, 15(4), 655-666 (English) 2002.  
CODEN: JSTEEW. ISSN: 0914-9244. Publisher: Technical Association  
of Photopolymers, Japan.
- AB Lithog. with 157-nm fluorine lasers is rapidly emerging as the next  
evolutionary step in optical lithog. and is clearly seen as the  
likely successor to 193-nm lithog. As has been demonstrated with

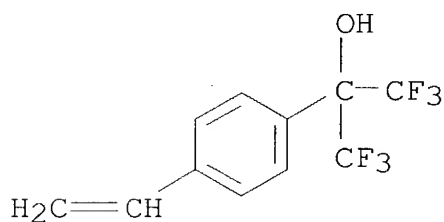
the transition to shorter wavelengths in the past, the **resist** materials that were developed for the longer wavelength applications are too absorbent for practical use as high-resoln. single layer **resist** with 157-nm radiation. Fluorine contg. polymers have been demonstrated to be more transparent in this spectral region than pure hydrocarbon polymers. We have developed and evaluated a no. of unique fluoroarom.-based 157-nm **resists** including 4-hexafluoroisopropanol styrene copolymers with t-Bu acrylate and acetyl blocked 4-hexafluoroisopropanol styrene. Our recent **resist** designs are shown to have imaging capability down to 70 nm with a 0.60 NA microstepper.

IT 370866-15-2, tert-Butyl methacrylate-4-Hexafluoroisopropanolstyrene copolymer 397302-34-0, tert-Butyl acrylate-4-Hexafluoroisopropanolstyrene copolymer (fluoroarom. **resists** for 157-nm lithog. contg.)  
 RN 370866-15-2 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX NAME)

CM 1

CRN 2386-82-5

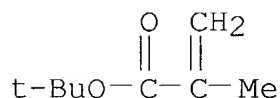
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

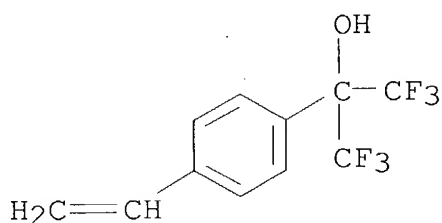
CMF C8 H14 O2



RN 397302-34-0 HCAPLUS  
 CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

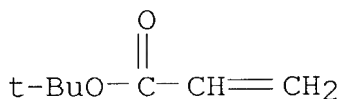
CM 1

CRN 2386-82-5  
 CMF C11 H8 F6 O



CM 2

CRN 1663-39-4  
 CMF C7 H12 O2



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 38  
 ST fluoroarom **photoresist** photolithog  
 IT **Photoresists**  
 Thickness  
 (fluoroarom. **resists** for 157-nm lithog.)  
 IT Etching  
 (plasma, oxide; fluoroarom. **resists** for 157-nm lithog.  
 contg.)  
 IT Photolithography  
 (vacuum UV; fluoroarom. **resists** for 157-nm lithog.)  
 IT 9011-14-7, Poly(methyl methacrylate) 25189-00-8,  
 Poly(tert-butylmethacrylate) 25232-27-3, Poly(tert-butylacrylate)  
 59269-51-1, Poly(hydroxystyrene) 64114-51-8,  
 Poly(isobornylmethacrylate) 116352-29-5, 4-

Hexafluoroisopropanolstyrene homopolymer 175284-06-7,  
tert-Butylacrylate-hydroxystyrene copolymer **370866-15-2**,  
tert-Butyl methacrylate-4-Hexafluoroisopropanolstyrene copolymer  
**397302-34-0**, tert-Butyl acrylate-4-  
Hexafluoroisopropanolstyrene copolymer 459424-12-5 459424-15-8  
479073-24-0

(fluoroarom. **resists** for 157-nm lithog. contg.)

L23 ANSWER 23 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2002:560003 Document No. 137:233574 Fluorocarbon polymer-based  
**photoresists** for 157-nm lithography. Fedynyshyn, T. H.;  
Mowers, W. A.; Kunz, R. R.; Sinta, R. F.; Sworin, M.; Cabral, A.;  
Curtin, J. (Lincoln Laboratory, Massachusetts Institute of  
Technology, Lexington, MA, 02420, USA). Polymeric Materials Science  
and Engineering, 87, 398-399 (English) 2002. CODEN: PMSEDG. ISSN:  
0743-0515. Publisher: American Chemical Society.

AB The purpose of this work is to explore the utility of the  
4-hexafluoroisopropanol styrene (HFIP) moiety as a base sol., arom.  
component in polymer backbones for 157-nm lithog. The homopolymer  
exhibits an absorbance of 3.44/g at 157 nm'. Copolymers of HFIP  
with tert-Bu acrylate were prepd. as well as OH blocked versions of  
the homopolymer. Various blocking groups were used including  
carbonates and acetals. The thermal stability of the blocked  
polymers is compared and contrasted. Properties such as the 157-nm  
absorbance and thermal degrdn. are shown to be a strong function of  
the amt. of blocking group present in the polymer. Finally  
**photoresist** formulations were prepd. from representative  
polymers and imaging results are presented which indicate that these  
systems are capable of sub-100 nm resolu.

IT **397302-34-0**  
(fluorocarbon polymer-based **photoresists** for 157-nm  
lithog.)

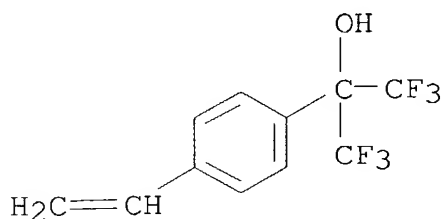
RN **397302-34-0** HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 2386-82-5

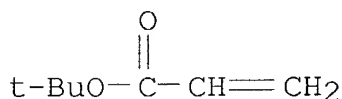
CMF C11 H8 F6 O



CM 2

CRN 1663-39-4

CMF C7 H12 O2



CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 74

ST fluorocarbon polymer based **photoresist** lithog;hexafluoroisopropanol styrene polymer **photoresist** lithog

IT Lithography

**Photoresists**

Thermal stability

(fluorocarbon polymer-based **photoresists** for 157-nm lithog.)

IT Fluoropolymers, uses

(fluorocarbon polymer-based **photoresists** for 157-nm lithog.)

IT Polymer degradation

(thermal; fluorocarbon polymer-based **photoresists** for 157-nm lithog.)IT 143336-94-1 397302-12-4 397302-18-0 **397302-34-0**

397302-44-2 457048-18-9 459424-12-5 459424-14-7 459424-15-8

(fluorocarbon polymer-based **photoresists** for 157-nm lithog.)

IT 2386-82-5 5292-43-3, tert-Butylbromoacetate

(fluorocarbon polymer-based **photoresists** for 157-nm lithog.)

IT 397302-17-9P

(monomer; fluorocarbon polymer-based **photoresists** for 157-nm lithog.)

L23 ANSWER 24 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2002:392162 Document No. 136:409022 Positive **resist**  
composition. Aoai, Toshiaki; Yasunami, Shoichiro; Mizutani,  
Kazuyoshi; Kanna, Shinichi (Fuji Photo Film Co., Ltd., Japan). U.S.  
Pat. Appl. Publ. US 2002061464 A1 20020523, 56 pp. (English).  
CODEN: USXXCO. APPLICATION: US 2001-961281 20010925. PRIORITY: JP  
2000-292537 20000926; JP 2000-379284 20001213; JP 2001-62158  
20010306; JP 2001-202298 20010703.

AB The present invention relates to a pos. **resist** compn.  
comprising: (A) a fluorine group-contg. resin having at least one  
fluorine atom on at least one of the main chain and the side chain  
of the polymer skeleton; and having a group capable of decompg.  
under the action of an acid to increase the soly. in an alkali  
developer; (B) a compd. capable of generating an acid upon irradiation  
with one of actinic ray and radiation; and (C) a surfactant contg.  
at least one of a silicon atom and a fluorine atom. The present  
invention provides a pos. **photoresist** compn. suitable for  
use in the microlithog. process in the prodn. of VLSI or  
high-capacity microchip, or in other photo-fabrication processes.  
The invention pos. **photoresist** compn. is capable of  
forming a highly definite pattern using a vacuum UV ray of < 160 nm.

IT 430437-40-4P

(fluorine group-contg. resin for pos. **resist** compn.)

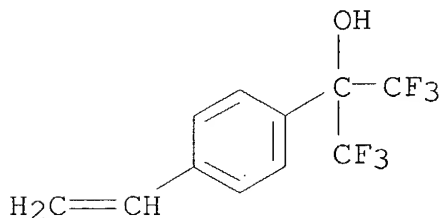
RN 430437-40-4 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
2-methyl-2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 2386-82-5

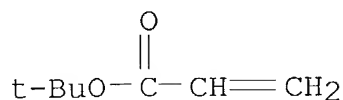
CMF C11 H8 F6 O



CM 2

CRN 1663-39-4

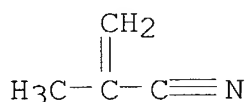
CMF C7 H12 O2



CM 3

CRN 126-98-7

CMF C4 H5 N



IC ICM G03F007-004

NCL 430270100

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 35, 38, 76

ST **photoresist** fluorine contg resin compn surfactant  
photolithog UV

IT Surfactants

(fluorine group-contg. pos. **resist** compn. contg.)IT Positive **photoresists**(fluorine group-contg. resin for pos. **resist** compn.)

IT Polysiloxanes, uses

(surfactant; fluorine group-contg. pos. **resist** compn.  
contg.)

IT Photolithography

(vacuum UV; fluorine group-contg. resin for pos. **resist**  
compn. for)

IT	262617-13-0P	430436-66-1P	430436-67-2P	430436-68-3P
	430436-70-7P	430436-72-9P	430436-74-1P	430436-76-3P
	430436-78-5P	430436-79-6P	430436-81-0P	430436-82-1P
	430436-84-3P	430436-85-4P	430436-86-5P	430436-87-6P
	430436-89-8P	430436-90-1P	430436-91-2P	430436-92-3P
	430436-94-5P	430436-95-6P	430436-97-8P	430436-98-9P
	430436-99-0P	430437-01-7P	430437-03-9P	430437-04-0P
	430437-05-1P	430437-07-3P	430437-09-5P	430437-11-9P
	430437-12-0P	430437-13-1P	430437-14-2P	430437-15-3P
	430437-17-5P	430437-18-6P	430437-19-7P	430437-21-1P
	430437-22-2P	430437-24-4P	430437-26-6P	430437-27-7P
	430437-29-9P	430437-30-2P	430437-32-4P	430437-33-5P

430437-34-6P 430437-35-7P 430437-36-8P 430437-37-9P  
430437-38-0P 430437-39-1P **430437-40-4P** 430437-42-6P  
430437-44-8P 430437-46-0P 431062-12-3P 431062-14-5P  
431062-16-7P 431062-17-8P 431062-18-9P 431062-20-3P  
431062-22-5P 431062-24-7P 431062-25-8P

(fluorine group-contg. resin for pos. **resist** compn.)

IT 144317-44-2, Triphenylsulfonium nonaflate  
(photoacid generator; fluorine group-contg. pos. **resist**  
compn. contg.)

IT 9016-45-9, Polyoxyethylene nonylphenyl ether 137462-24-9, Megafac  
F176 216679-67-3, Megafac R08  
(surfactant; fluorine group-contg. pos. **resist** compn.  
contg.)

L23 ANSWER 25 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2002:345222 Document No. 136:377471 Positively working  
radiation-sensitive **resist** composition with improved  
coatability. Kanna, Shinichi; Kodama, Kunihiro (Fuji Photo Film  
Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002131898 A2  
20020509, 63 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
2000-327424 20001026.

AB The compn. contains (A) polymers increasing soly. in alkali  
developers by decompn. with acids, (B) acid generator by irradiation of  
actinic ray, (C) org. basic compds., (D) solvents, and (E) 50-5000  
ppm surfactants, preferably having fluoroalkyl group in the mol., to  
get discolored by irradiation of actinic ray. The compn. prevents  
generation of standing wave.

IT **422508-78-9P**  
(pos.-working radiation-sensitive **resist** compn. contg.  
fluoroalkyl-substituted discolorable surfactant with improved  
coatability)

RN 422508-78-9 HCAPLUS

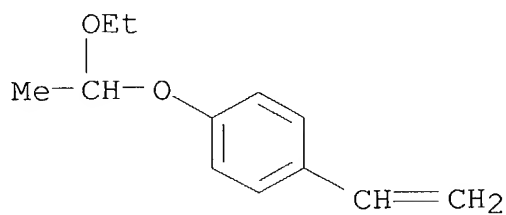
CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
1,1-dimethylethyl 4-ethenylphenyl carbonate, 1-ethenyl-4-(1-  
ethoxyethoxy)benzene and 4-ethenylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 157057-20-0

CMF C12 H16 O2

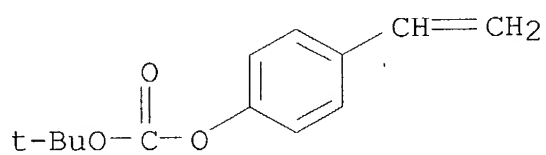




CM 2

CRN 87188-51-0

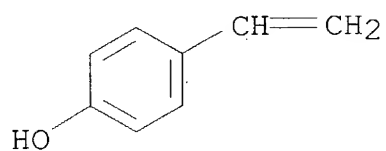
CMF C13 H16 O3



CM 3

CRN 2628-17-3

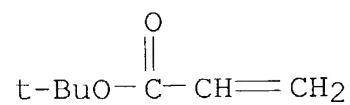
CMF C8 H8 O



CM 4

CRN 1663-39-4

CMF C7 H12 O2



IC ICM G03F007-004  
ICS G03F007-004; C08K005-00; C08L101-12; G03F007-039; H01L021-027  
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
ST pos radiation sensitive resit coatability standing wave prevention;  
fluoroalkyl discolorable surfactant radiation sensitive  
**resist**  
IT Positive **photoresists**  
Surfactants  
(pos.-working radiation-sensitive **resist** compn. contg.  
fluoroalkyl-substituted discolorable surfactant with improved  
coatability)  
IT 13891-29-7, Triphenylsulfonium p-toluenesulfonate 138529-81-4,  
Bis(cyclohexylsulfonyl)diazomethane 197447-16-8 422508-79-0  
(photoacid generator; pos.-working radiation-sensitive  
**resist** compn. contg. fluoroalkyl-substituted discolorable  
surfactant with improved coatability)  
IT 109-53-5DP, Isobutyl vinyl ether, reaction products with Bu  
acrylate-hydroxystyrene copolymer 926-02-3DP, tert-Butyl vinyl  
ether, reaction products with hydroxystyrene polymer and  
cyclohexaneethanol 4442-79-9DP, Cyclohexaneethanol, reaction  
products with hydroxystyrene polymer and Bu vinyl ether  
24979-70-2DP, VP 8000, reaction products with Bu vinyl ether and  
cyclohexaneethanol 121273-79-8P 129674-22-2P,  
p-(tert-Butoxycarbonyloxy)styrene-p-hydroxystyrene copolymer  
158593-28-3P, p-(1-Ethoxyethoxy)styrene-p-hydroxystyrene copolymer  
159296-87-4P, tert-Butyl acrylate-p-vinylphenol copolymer  
199432-82-1P, p-Hydroxystyrene-p-(1-isobutoxyethoxy)styrene  
copolymer 200808-68-0P, tert-Butyl acrylate-p-hydroxystyrene-  
styrene copolymer 288620-15-5P, p-(1-Benzyloxyethoxy)styrene-p-  
hydroxystyrene copolymer 325143-38-2P 365971-61-5P  
365971-64-8P 365971-70-6P 365971-71-7P 365971-72-8P  
376600-58-7P 387382-49-2P 422508-57-4P 422508-61-0P  
422508-62-1P 422508-64-3P 422508-65-4P 422508-66-5P  
422508-67-6P 422508-71-2P 422508-72-3P 422508-74-5P  
422508-76-7P 422508-77-8P **422508-78-9P**  
(pos.-working radiation-sensitive **resist** compn. contg.  
fluoroalkyl-substituted discolorable surfactant with improved  
coatability)  
IT 524-38-9, N-Hydroxyphthalimide 3744-08-9, Triphenylsulfonium  
iodide 141784-10-3, 2-Nitro-6-trifluoromethylbenzyl alcohol  
365971-60-4  
(pos.-working radiation-sensitive **resist** compn. contg.  
fluoroalkyl-substituted discolorable surfactant with improved  
coatability)  
IT 102-82-9, Tributylamine 484-47-9, 2,4,5-Triphenylimidazole  
3001-72-7, 1,5-Diazabicyclo[4.3.0]-5-nonene 312386-77-9  
422508-59-6 422508-63-2 422508-69-8

(pos.-working radiation-sensitive **resist** compn. contg. fluoroalkyl-substituted discolorable surfactant with improved coatability)

L23 ANSWER 26 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

2001:911549 Document No. 136:286470 Development of 157 nm positive **resists**. Ito, H.; Wallraff, G. M.; Fender, N.; Brock, P. J.; Hinsberg, W. D.; Mahorowala, A.; Larson, C. E.; Truong, H. D.; Breyta, G.; Allen, R. D. (IBM Almaden Research Center, San Jose, CA, 95120, USA). Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures, 19(6), 2678-2684 (English) 2001. CODEN: JVTBD9. ISSN: 0734-211X. Publisher: American Institute of Physics.

AB For adequate transparency hexafluoroisopropanol as an acid group and an  $\alpha$ -trifluoromethylacrylic moiety as a repeat unit have been selected as 157 nm **resist** polymers. The hexafluoroalc. group is bound to norbornene or styrene. Four platforms are currently available (1) all-acrylic, (2) all-alicyclic, (3) acrylic-alicyclic, and (4) acrylic-arom. systems. While the all-alicyclic (all-norbornene) polymers are synthesized by transition-metal-initiated addn. polymn., all other polymers involving  $\alpha$ -trifluoromethylacrylic monomers are prepd. by conventional radical copolymn. Characterization of the polymers and preliminary lithog. evaluation are reported.

IT 370866-15-2P

(development of 157 nm pos. **resists**)

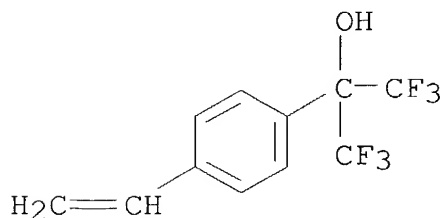
RN 370866-15-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX NAME)

CM 1

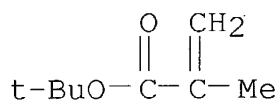
CRN 2386-82-5

CMF C11 H8 F6 O



CM 2

CRN 585-07-9  
CMF C8 H14 O2



- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 37, 38
- ST pos **photoresist** photolithog UV fluoropolymer development
- IT Photolithography  
Positive **photoresists**  
(development of 157 nm pos. **resists**)
- IT Fluoropolymers, properties  
(development of 157 nm pos. **resists**)
- IT Etching  
Optical absorption  
(development of 157 nm pos. **resists** in relation to)
- IT Polysulfones, properties  
(development of 157 nm pos. **resists** in relation to)
- IT 381-98-6D, polymer with Bu trifluoromethylacrylate and norbornene deriv. 382-90-1 105935-24-8D, polymer with trifluoromethylacrylic acid and norbornene deriv. 196314-61-1  
(development of 157 nm pos. **resists**)
- IT 370866-13-0P **370866-15-2P** 370866-19-6P  
(development of 157 nm pos. **resists**)
- IT 381-98-6P,  $\alpha$ -Trifluoromethylacrylic acid 105935-24-8P, tert-Butyl  $\alpha$ -Trifluoromethylacrylate 116352-29-5P  
(development of 157 nm pos. **resists**)
- IT 498-66-8, Norbornene  
(development of 157 nm pos. **resists**)
- IT 585-07-9 9011-14-7, Polymethylmethacrylate 25189-00-8  
28825-23-2 59269-51-1, Polyhydroxystyrene 87261-04-9  
88403-53-6 159296-87-4 199007-59-5 357397-07-0 370866-39-0  
370866-48-1 390746-59-5 397302-12-4 406498-97-3  
(development of 157 nm pos. **resists**)
- IT 84540-57-8, Propylene glycol methyl ether acetate  
(development of 157 nm pos. **resists** in relation to propylene glycol Me ether acetate residual concn. after bake)

L23 ANSWER 27 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2001:803896 Document No. 136:110018 High-resolution fluorocarbon-based **resist** for 157-nm lithography. Fedynyshyn, Theodore H.; Kunz, Roderick R.; Sinta, Roger F.; Sworin, Michael; Mowers, William

A.; Goodman, Russell B.; Doran, Scott P. (Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA, 02420, USA). Proceedings of SPIE-The International Society for Optical Engineering, 4345(Pt. 1, Advances in Resist Technology and Processing XVIII), 296-307 (English) 2001. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB Lithog. at 157nm = the next evolutionary step in optical lithog. and is clearly seen as the likely successor to 193nm lithog. If successful, the **photoresists** used for this technol. must be initially capable of 100nm resoln. and be extendable to <70nm. As with the transition to shorter wavelengths in the past, the **photoresist** materials developed for longer wavelengths appear to be too absorbent for practical use as a traditional high resoln. single layer **resist** imageable with 157nm radiation. The high 157nm absorbance of polyacrylate, polycyclic, and polyhydroxystyrene copolymer **resists**, will force the coated **resist** thickness to be under 100nm. Some F-functionalized polymers are more transparent in this spectral region than pure hydrocarbon polymers. This led one to study the use of fluorocarbon polymers in **resists** specially designed for 157nm lithog. The authors synthesized and evaluated a no. of unique 4-hexafluoroisopropanol- styrene based polymer systems that yield **resists** in which the 157nm absorbance ranges from 3.0 to 4.0  $\mu\text{m}$ . **Resists** of this type are potentially capable of imaging at **resist** thickness of 150nm. Examples of the high performance imaging capability of the **resist** design have imaging capability of 150nm with 0.50NA microstepper and 40nm employing interference lithog.

IT 370866-15-2 389610-85-9  
(exposed film thickness loss of polymers in high-resoln. fluorocarbon-based **resist** for 157-nm lithog.)

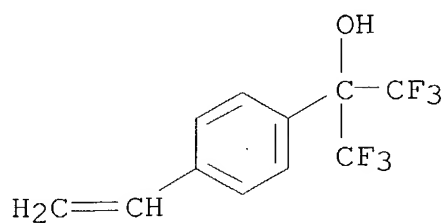
RN 370866-15-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 2386-82-5

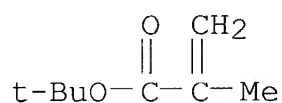
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

CMF C8 H14 O2



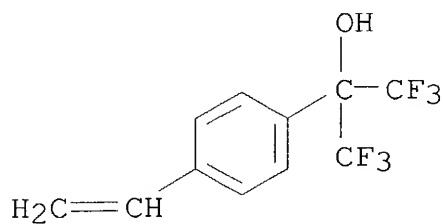
RN 389610-85-9 HCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
ethenylbenzene and 4-ethenyl- $\alpha,\alpha$ -  
bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX NAME)

CM 1

CRN 2386-82-5

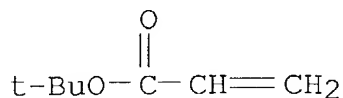
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CM 2

CRN 1663-39-4

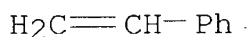
CMF C7 H12 O2



CM 3

CRN 100-42-5

CMF C8 H8



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST fluorocarbon **resist** 157 nm lithog plasma etching;  
polyhydroxystyrene fluoropolymer **photoresist** lithog

IT Photolithography  
(high-resoln. fluorocarbon-based **photoresist** for 157-nm lithog.)

IT **Photoresists**  
(high-resoln. fluorocarbon-based **resist** for 157-nm lithog.)

IT Fluoropolymers, uses  
(high-resoln. fluorocarbon-based **resist** for 157-nm lithog.)

IT 9011-14-7 24979-70-2 25189-00-8 25232-27-3 64114-51-8,  
Isobornyl methacrylate homopolymer 116352-29-5 122056-09-1  
159296-87-4 **370866-15-2 389610-85-9**  
(exposed film thickness loss of polymers in high-resoln. fluorocarbon-based **resist** for 157-nm lithog.)

IT 7440-21-3, Silicon, uses 24979-71-3 155040-27-0  
(high-resoln. fluorocarbon-based **resist** for 157-nm lithog.)

IT 13827-26-4, Calcium fluoride (CaF)  
(substrate; high-resoln. fluorocarbon-based **resist** for 157-nm lithog.)

IT 999-97-3  
(surface treatment agent; high-resoln. fluorocarbon-based **resist** for 157-nm lithog.)

L23 ANSWER 28 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2001:803895 Document No. 136:175369 Experimental VUV absorbance study of fluorine-functionalized polystyrenes. Kunz, Roderick R.; Sinta, Roger F.; Sworin, Michael; Mowers, William A.; Fedynyshyn, Theodore

H.; Liberman, Vladimir; Curtin, Jane E. (Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA, 02420-9108, USA). Proceedings of SPIE-The International Society for Optical Engineering, 4345(Pt. 1, Advances in Resist Technology and Processing XVIII), 285-295 (English) 2001. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB A no. of fluoro-functionalized poly(4-hydroxystyrene) derivs., consisting of both blocked and unblocked hexafluoroisopropanol-substituted styrenes, were prep'd. and their vacuum-UV absorption spectra were measured. The authors find that a wide range of synthetic flexibility exists and allows for a variety of fluorinated analogs of APEX-like and ESCAP-like copolymers and terpolymers with 157 nm absorption coeffs. less than 4.0  $\mu\text{m}$ . From these findings, the authors concluded that facile routes to high performance 157 nm resins are possible with optimum imaging thicknesses of 100 to 130 nm.

IT 370866-15-2 397302-34-0 397302-39-5  
397302-51-1 397302-57-7 397302-62-4  
397302-67-9 397302-71-5

(vacuum-UV absorption spectra of fluorine-functionalized polystyrenes in relation to design of **photoresists** for 157 nm lithog.)

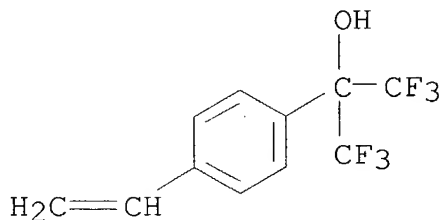
RN 370866-15-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 2386-82-5

CMF C11 H8 F6 O

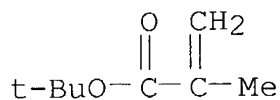


CM 2

CRN 585-07-9

CMF C8 H14 O2

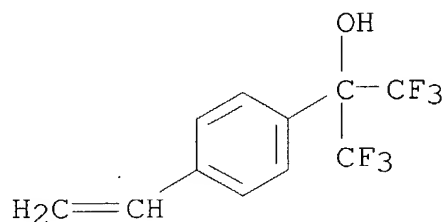




RN 397302-34-0 HCAPLUS  
 CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

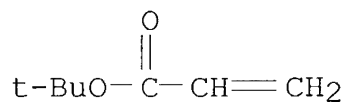
CM 1

CRN 2386-82-5  
 CMF C11 H8 F6 O



CM 2

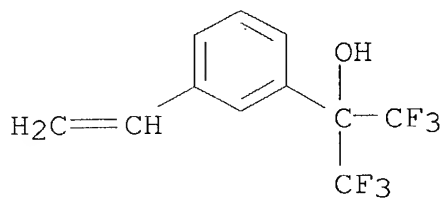
CRN 1663-39-4  
 CMF C7 H12 O2



RN 397302-39-5 HCAPLUS  
 CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
 3-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
 (CA INDEX NAME)

CM 1

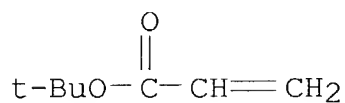
CRN 122056-08-0  
 CMF C11 H8 F6 O



CM 2

CRN 1663-39-4

CMF C7 H12 O2



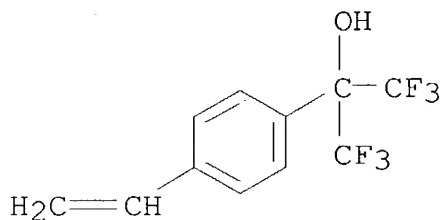
RN 397302-51-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 1-ethenyl-3,5-bis(trifluoromethyl)benzene and 4-ethenyl-  
 $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI) (CA INDEX  
 NAME)

CM 1

CRN 2386-82-5

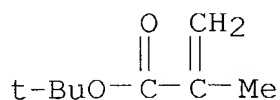
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

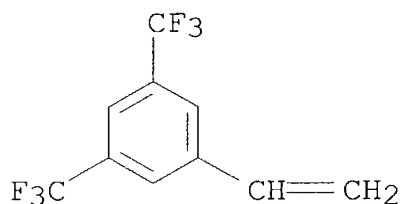
CMF C8 H14 O2



CM 3

CRN 349-59-7

CMF C10 H6 F6



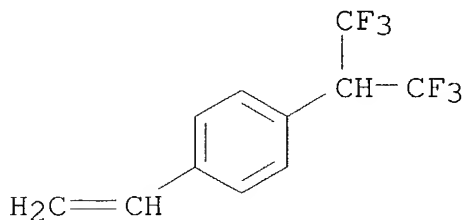
RN 397302-57-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
 1-ethenyl-4-[2,2,2-trifluoro-1-(trifluoromethyl)ethyl]benzene (9CI)  
 (CA INDEX NAME)

CM 1

CRN 397302-06-6

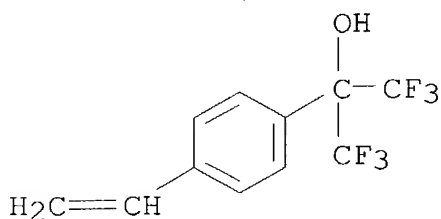
CMF C11 H8 F6



CM 2

CRN 2386-82-5

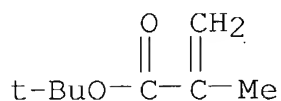
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



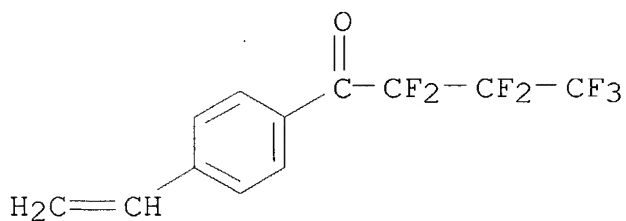
RN 397302-62-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
 1-(4-ethenylphenyl)-2,2,3,3,4,4,4-heptafluoro-1-butanone (9CI) (CA  
 INDEX NAME)

CM 1

CRN 74946-46-6

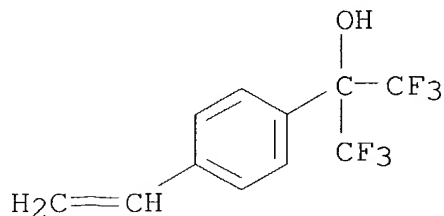
CMF C12 H7 F7 O



CM 2

CRN 2386-82-5

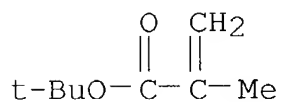
CMF C11 H8 F6 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



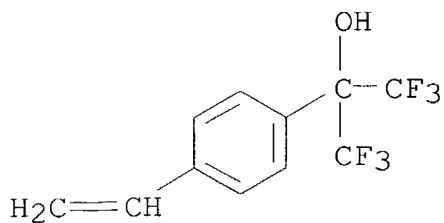
RN 397302-67-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 2386-82-5

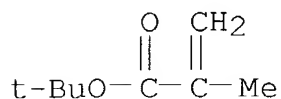
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

CMF C8 H14 O2



CM 3

CRN 107-13-1

CMF C3 H3 N



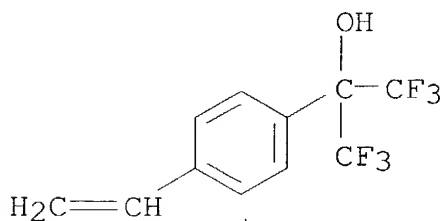
RN 397302-71-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol and  
2-methyl-2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 2386-82-5

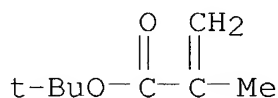
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

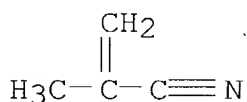
CMF C8 H14 O2



CM 3

CRN 126-98-7

CMF C4 H5 N



- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 36, 73
- ST optical absorption vacuum UV fluorine functionalized polystyrene **photoresist** design; absorption coeff fluorine functionalized polystyrene vacuum UV lithog **photoresist**
- IT Transparency  
(UV; vacuum-UV absorption spectra of fluorine-functionalized polystyrenes in relation to design of **photoresists** for 157 nm lithog.)
- IT Thickness  
(coating properties and vacuum-UV absorption spectra of fluorine-functionalized polystyrenes in relation to design of **photoresists** for 157 nm lithog.)
- IT Absorptivity  
Optical absorption  
**Photoresists**  
Substituent effects  
(vacuum-UV absorption spectra of fluorine-functionalized polystyrenes in relation to design of **photoresists** for 157 nm lithog.)
- IT 108-94-1, Cyclohexanone, uses 1320-67-8, Propylene glycol monomethyl ether  
(casting solvent; vacuum-UV absorption spectra of fluorine-functionalized polystyrenes in relation to design of **photoresists** for 157 nm lithog.)
- IT 185195-30-6  
(photoacid generator; vacuum-UV absorption spectra of fluorine-functionalized polystyrenes in relation to design of **photoresists** for 157 nm lithog.)

- IT 25014-41-9, Acrylonitrile homopolymer 25067-61-2,  
Methacrylonitrile homopolymer 25189-00-8 25232-27-3  
26009-55-2, 4-tert-Butylstyrene homopolymer 28825-19-6  
105935-25-9  
(ref.; vacuum-UV absorption spectra of fluorine-functionalized polystyrenes in relation to design of **photoresists** for 157 nm lithog.)
- IT 9003-53-6, Polystyrene  
(ref.; vacuum-UV absorption spectra of fluorine-functionalized polystyrenes in relation to design of **photoresists** for 157 nm lithog.)
- IT 7789-75-5, Calcium difluoride, uses  
(substrate; vacuum-UV absorption spectra of fluorine-functionalized polystyrenes in relation to design of **photoresists** for 157 nm lithog.)
- IT 24936-47-8, Poly(4-fluorostyrene) 31287-32-8, 3-Fluorostyrene homopolymer 59829-16-2, 4-Trifluoroacetylstyrene homopolymer 74946-47-7, 4-(1-Oxyheptafluorobutyl)styrene homopolymer 77884-24-3, 4-Trifluoromethylstyrene homopolymer 77884-32-3, 3,5-Bis(trifluoromethyl)styrene homopolymer 94509-60-1, Pentafluorostyrene homopolymer 116352-29-5, 4-Hexafluoroisopropanolstyrene homopolymer 122056-09-1, 3-Hexafluoroisopropanolstyrene homopolymer 125431-53-0, 2-Hexafluoroisopropanolstyrene homopolymer 143336-94-1 370866-13-0 370866-15-2 397302-07-7, 4-Hexafluoroisopropylstyrene homopolymer 397302-12-4 397302-18-0 397302-23-7 397302-29-3 397302-34-0 397302-39-5 397302-44-2 397302-51-1 397302-57-7 397302-62-4 397302-67-9 397302-71-5  
(vacuum-UV absorption spectra of fluorine-functionalized polystyrenes in relation to design of **photoresists** for 157 nm lithog.)
- L23 ANSWER 29 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2001:803894 Document No. 136:126405 Polymer design for 157-nm chemically amplified **resists**. Ito, Hiroshi; Wallraff, Gregory M.; Brock, Phillip J.; Fender, Nicolette; Truong, Hoa D.; Breyta, Gregory; Miller, Dolores C.; Sherwood, Mark H.; Allen, Robert D. (IBM Almaden Research Center, San Jose, CA, 95120, USA). Proceedings of SPIE-The International Society for Optical Engineering, 4345(Pt. 1, Advances in Resist Technology and Processing XVIII), 273-284 (English) 2001. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.
- AB Based on UV measurements at 157 nm of inhouse fluoropolymers we have selected  $\alpha$ -trifluoromethylacrylate and norbornene bearing a pendant hexafluoroisopropanol group as our building blocks for 157 nm **resist** polymers. Polymers consisting of these repeat



units have an optical d./ $\mu\text{m}$  of 3 or below at 157 nm. We have found that the  $\alpha$ -trifluoromethylacrylate derivs. conveniently undergo radical copolymn. with norbornenes, which has provided a breakthrough in prepn. of our 157 nm **resist** polymers. This approach offers flexibility and versatility because an acidic moiety or acid-labile group can be placed in either acrylate or norbornene repeat unit. Other platforms of interest include all acrylic, all-norbornene, and acrylic-styrenic polymers.

IT 370866-15-2P

(fluoropolymers for 157-nm chem. amplified **resists**)

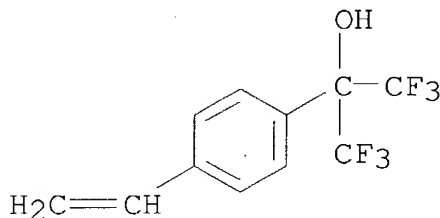
RN 370866-15-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 2386-82-5

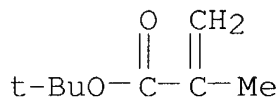
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

CMF C8 H14 O2



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38, 76

ST chem amplified **photoresist** fluoropolymer norbornene

IT Fluoropolymers, properties

(157-nm chem. amplified **photoresists** contg.)

IT Photolithography  
 (UV; fluoropolymers contg. 157-nm chem. amplified **resists**  
 for)

IT Polymerization  
 (co-, radical; fluoropolymers for 157-nm chem. amplified  
**resists**)

IT Absorptivity  
**Photoresists**  
 Thermogravimetric analysis  
 (fluoropolymers for 157-nm chem. amplified **resists**)

IT 370866-19-6P 370866-20-9P 370866-22-1P 370866-24-3P  
 370866-28-7P 370866-33-4P 370866-36-7P  
 (fluoropolymers for 157-nm chem. amplified **resists**)

IT 370866-39-0 370866-41-4 370866-44-7 391248-28-5 391248-30-9  
 (fluoropolymers for 157-nm chem. amplified **resists**)

IT 2386-82-5  
 (fluoropolymers for 157-nm chem. amplified **resists**)

IT 370866-13-0P **370866-15-2P**  
 (fluoropolymers for 157-nm chem. amplified **resists**)

IT 421-50-1  
 (prepn. of fluoropolymers for 157-nm chem. amplified  
**resists**)

IT 381-98-6P, 2-(Trifluoromethyl)acrylic acid 20530-38-5P  
 370866-43-6P  
 (prepn. of fluoropolymers for 157-nm chem. amplified  
**resists**)

L23 ANSWER 30 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
 2001:621450 Document No. 135:350410 Novel fluoropolymers for use in  
 157 nm lithography. Ito, H.; Wallraff, G. M.; Fender, N.; Brock, P.  
 J.; Larson, C. E.; Truong, H. D.; Breyta, G.; Miller, D. C.;  
 Sherwood, M. H.; Allen, R. D. (IBM Almaden Research Center, San  
 Jose, CA, 95120, USA). Journal of Photopolymer Science and  
 Technology, 14(4), 583-594 (English) 2001. CODEN: JSTEEW. ISSN:  
 0914-9244. Publisher: Technical Association of Photopolymers,  
 Japan.

AB Unexpectedly good UV transmittance at 157 nm of poly(norbornene  
 sulfone) bearing a pendant hexafluoroisopropanol functionality has  
 prompted the authors to employ this fluoroalc. as an acid group for  
 the design of chem. amplification **resists** for use in 157  
 nm lithog. The backbone structures to which the hexafluoroalc.  
 group is attached are polynorbornene and polystyrene. Furthermore,  
 the authors discovery that poly(Me  $\alpha$ -trifluoromethylacrylate)  
 is adequately transparent at 157 nm has led the authors to  
 incorporate the  $\alpha$ -trifluoromethylacrylic unit in the polymer  
 backbone by radical copolymn. with styrenes and norbornenes. Thus,  
 four platforms are currently available to the authors in prepn. of  
 157 nm **resist** polymers; (1) all-acrylic, (2)

all-norbornene, (3) acrylic-norbornene, and (4) acrylic-styrenic systems.

IT 370866-15-2P, p-(Hexafluoro-2-hydroxypropyl)styrene-tert-butyl methacrylate copolymer

(fluoropolymers based on  $\alpha$ -trifluoromethylacrylate copolymers for vacuum UV **photoresist** applications)

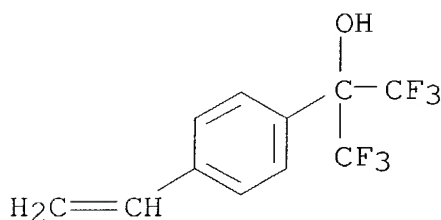
RN 370866-15-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 4-ethenyl- $\alpha,\alpha$ -bis(trifluoromethyl)benzenemethanol (9CI)  
(CA INDEX NAME)

CM 1

CRN 2386-82-5

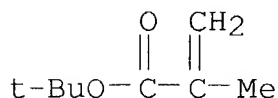
CMF C11 H8 F6 O



CM 2

CRN 585-07-9

CMF C8 H14 O2



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 36

ST fluoropolymer vacuum UV lithog **photoresist**;

fluoromethylacrylate copolymer vacuum UV lithog **photoresist**

IT **Photoresists**

(chem. amplified; synthesis and properties and lithog. evaluation of fluoropolymers based on  $\alpha$ -trifluoromethylacrylate copolymers for vacuum UV **photoresist** applications)

IT Dissolution rate

- (lithog. evaluation of fluoropolymers based on  $\alpha$ -trifluoromethylacrylate copolymers for vacuum UV **photoresist** applications)
- IT Polymerization  
Polymerization kinetics  
(radical; synthesis and properties and lithog. evaluation of fluoropolymers based on  $\alpha$ -trifluoromethylacrylate copolymers for vacuum UV **photoresist** applications)
- IT Fluoropolymers, properties  
(synthesis and properties and lithog. evaluation of fluoropolymers based on  $\alpha$ -trifluoromethylacrylate copolymers for vacuum UV **photoresist** applications)
- IT 75-59-2, Tetramethylammonium hydroxide  
(developer; lithog. evaluation of fluoropolymers based on  $\alpha$ -trifluoromethylacrylate copolymers for vacuum UV **photoresist** applications)
- IT 370866-15-2P, p-(Hexafluoro-2-hydroxypropyl)styrene-tert-butyl methacrylate copolymer  
(fluoropolymers based on  $\alpha$ -trifluoromethylacrylate copolymers for vacuum UV **photoresist** applications)
- IT 213740-80-8, Di-(4-tert-butylphenyl)iodonium perfluorooctanesulfonate  
(photoacid generator; lithog. evaluation of fluoropolymers based on  $\alpha$ -trifluoromethylacrylate copolymers for vacuum UV **photoresist** applications)
- IT 78-67-1, AIBN  
(synthesis and properties and lithog. evaluation of fluoropolymers based on  $\alpha$ -trifluoromethylacrylate copolymers for vacuum UV **photoresist** applications)
- IT 370866-17-4P 370866-19-6P 370866-20-9P 370866-22-1P  
370866-24-3P 370866-28-7P 370866-33-4P 370866-36-7P  
370866-39-0P 370866-41-4P 370866-44-7P 370866-47-0P  
370866-48-1P  
(synthesis and properties and lithog. evaluation of fluoropolymers based on  $\alpha$ -trifluoromethylacrylate copolymers for vacuum UV **photoresist** applications)
- IT 2386-82-5, p-(Hexafluoro-2-hydroxypropyl)styrene 105935-24-8, tert-Butyl  $\alpha$ -trifluoromethylacrylate  
(synthesis and properties and lithog. evaluation of fluoropolymers for **photoresist** application for 157 nm exposure lithog.)
- IT 370866-13-0P, p-(Hexafluoro-2-hydroxypropyl)styrene-tert-butyl  $\alpha$ -trifluoromethylacrylate copolymer  
(synthesis and properties and lithog. evaluation of fluoropolymers for **photoresist** application for 157 nm exposure lithog.)

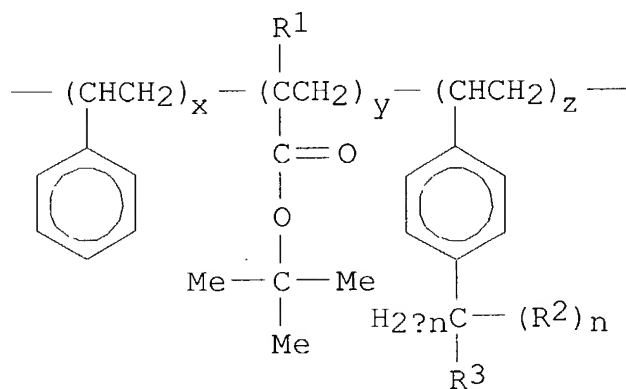
2001:186038 Document No. 134:214928 Polymer for chemically amplified **resist** and a **resist** composition using the same.

Kim, Deog-bae; Kim, Hyun-jin; Choi, Yong-joon; Chung, Yoon-sik

(Dongjin Semichem Co., Ltd., S. Korea). PCT Int. Appl. WO

2001018603 A2 20010315, 32 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 2000-KR956 20000825. PRIORITY: KR 1999-37772 19990907.

GI



AB The present invention relates to a polymer for a chem. amplified **resist** and a **resist** compn. using the same. The present invention provides a polymer represented by the Formula (I), where R1 = H or Me, R2 = H, or butoxycarbonylethyl, R3 = Cl, Br, OH, CN, T-BuO, CH2NH, CONH2, CH=NH, CH(OH)NH2 or C(OH)=NH, x+y+z = 1, n = 1 or 2 and when n is 2, both R2 are the same; and a chem. **resist** compn. for extreme UV light comprising the same. The chem. amplified **resist** compn. comprising the polymer represented by the formula (1) of the present invention responds to mono wavelength in a micro-lithog. process and can embody a micro-pattern of high resoln. on a substrate.

IT 328238-42-2P

(polymer for chem. amplified **resist** and **resist** compn.)

RN 328238-42-2 HCAPLUS

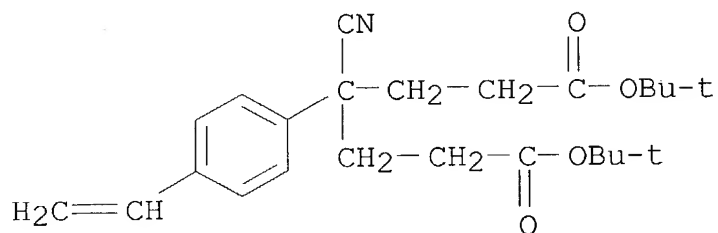
CN Heptanedioic acid, 4-cyano-4-(4-ethenylphenyl)-,

bis(1,1-dimethylethyl) ester, polymer with 1,1-dimethylethyl  
2-propenoate and 4-ethenylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 328238-41-1

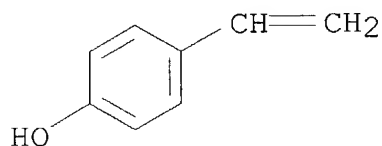
CMF C24 H33 N O4



CM 2

CRN 2628-17-3

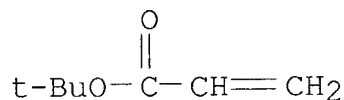
CMF C8 H8 O



CM 3

CRN 1663-39-4

CMF C7 H12 O2



IC ICM G03F

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)

ST polymer chem amplified **resist**

IT **Resists**

- (chem. amplified; polymer for chem. amplified **resist** and **resist** compn.)
- IT Lithography  
(polymer for chem. amplified **resist** and a **resist** compn.)
- IT Polymers, uses  
(polymer for chem. amplified **resist** and **resist** compn. contg.)
- IT 84540-57-8, PGMEA  
(PGMEA; polymer for chem. amplified **resist** and **resist** compn. contg.)
- IT 1592-11-6 1592-20-7, 4-Chloromethylstyrene 1663-39-4, tert-Butyl acrylate 2628-16-2, 4-Acetoxystyrene 328238-41-1  
(in synthesis of polymer for chem. amplified **resist** and **resist** compn.)
- IT 66003-78-9, Triphenylsulfonium triflate 84563-54-2, Bis(4-tert-butylphenyl)iodonium triflate 144089-15-6  
(photoacid generator; polymer for chem. amplified **resist** and **resist** compn. contg.)
- IT 328238-42-2P  
(polymer for chem. amplified **resist** and **resist** compn.)
- IT 97-64-3, Ethyl lactate  
(polymer for chem. amplified **resist** and **resist** compn. contg.)
- IT 129674-22-2, 4-Hydroxystyrene-4-(tert-butoxycarbonyloxy)styrene copolymer 158593-28-3, 4-Hydroxystyrene-4-(1-ethoxyethoxy)styrene copolymer  
(polymer for chem. amplified **resist** and **resist** compn. contg.)
- IT 5551-72-4 56530-39-3  
(polymer for chem. amplified **resist** and **resist** compn. contg.)

L23 ANSWER 32 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
2001:137496 Document No. 134:170838 Water-processable  
**photoresist** compositions. Yamada, Shintaro; Rager, Timo;  
Willson, C. Grant (Board of Regents, University of Texas System,  
USA). PCT Int. Appl. WO 2001013179 A1 20010222, 47 pp. DESIGNATED  
STATES: W: CA, JP, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB,  
GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2.  
APPLICATION: WO 2000-US22314 20000814. PRIORITY: US 1999-PV148836  
19990813; US 1999-PV149622 19990816.

- AB The invention relates to water-processable **photoresist**  
compns. H<sub>2</sub>O-processable pos.-tone **photoresists** comprising  
a H<sub>2</sub>O-sol. polymer, wherein the polymer contains a heat-labile  
functional group that renders the polymer insol. in H<sub>2</sub>O or an aq.  
base upon heat treatment, and an acid-labile functional group that

restores the H<sub>2</sub>O or aq. base soly. to the polymer upon irradiation in the presence of a H<sub>2</sub>O-processable photoacid generator, are described. Also described are the methods of making such polymers and **photoresists**.

IT 324740-21-8P 324740-23-0P

(synthesis of polymer for water-processable **photoresist** compns. using)

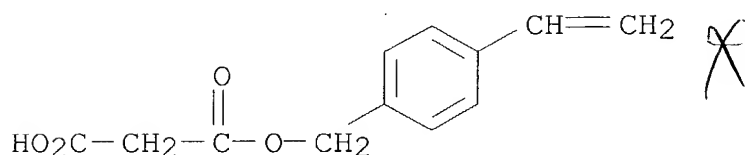
RN 324740-21-8 HCAPLUS

CN Propanedioic acid, mono[(4-ethenylphenyl)methyl] ester, polymer with 1,1-dimethylethyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 324740-20-7

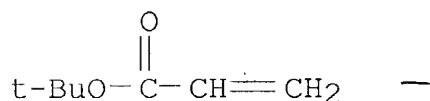
CMF C12 H12 O4



CM 2

CRN 1663-39-4

CMF C7 H12 O2



RN 324740-23-0 HCAPLUS

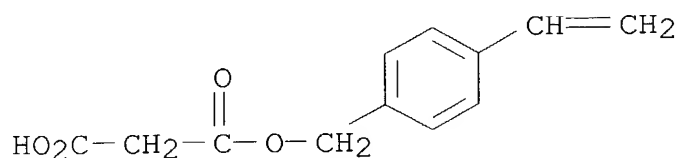
CN Propanedioic acid, mono[(4-ethenylphenyl)methyl] ester, ammonium salt, polymer with 1,1-dimethylethyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 324740-22-9

CMF C12 H12 O4 . H3 N

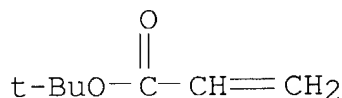




CM 2

CRN 1663-39-4

CMF C7 H12 O2



- IC ICM G03F007-00  
ICS G03F007-38; C08F008-48; C08F246-00; G03C001-00
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST water processible **photoresist**
- IT Decarboxylation  
Thermal decomposition  
(synthesis and thermal decompn. of polymer for water-processable pos. **photoresist** compns.)
- IT Functional groups  
Positive **photoresists**  
(synthesis of polymer for water-processable pos. **photoresist** compns.)
- IT 324740-09-2P  
(synthesis of polymer for water-processable **photoresist** compns.)
- IT 324740-27-4P 324740-28-5P  
(synthesis of polymer for water-processable **photoresist** compns. using)
- IT 124-76-5, Isoborneol 141-82-2, Malonic acid, reactions  
1073-67-2, p-Chlorostyrene 1592-20-7, 4-Chloromethylstyrene  
1663-39-4, Tert-Butyl acrylate 1791-26-0, 4-Vinylbenzaldehyde  
2033-24-1, Meldrum's acid 2628-16-2, 4-Acetoxystyrene 3709-18-0,  
2,2,5-Trimethyl-1,3-dioxane-4,6-dione 46122-65-0,

4-Vinylphenylacetic acid 72594-86-6 152845-13-1, Tert-Butyl  
4-vinylphenylacetate 173947-43-8 246859-45-0

(synthesis of polymer for water-processable **photoresist**  
comps. using)

IT 324740-06-9P 324740-07-0P 324740-08-1P  
324740-10-5P 324740-11-6P 324740-12-7P 324740-14-9P  
324740-15-0P 324740-16-1P 324740-17-2P 324740-18-3P  
324740-19-4P **324740-21-8P 324740-23-0P**  
324740-25-2P

(synthesis of polymer for water-processable **photoresist**  
comps. using)

IT 324740-13-8P 324740-24-1P 324740-26-3P  
(synthesis of polymer for water-processable **photoresist**  
comps. using)

L23 ANSWER 33 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

2000:117258 Document No. 132:173395. Radiation-sensitive composition  
for chemically amplified **photoresist**. Pawlowski, Georg;  
Okazaki, Hiroshi; Kinoshita, Yoshiaki; Tsugama, Naoko; Hishida,  
Aritaka; Ma, Xiao-ming; Yamaguchi, Yuko (Clariant International  
Ltd., Switz.). PCT Int. Appl. WO 2000008525 A1 20000217, 133 pp.  
DESIGNATED STATES: W: CN, JP, KR, SG, US; RW: AT, BE, CH, CY, DE,  
DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (Japanese).  
CODEN: PIXXD2. APPLICATION: WO 1999-JP4304 19990809. PRIORITY: JP  
1998-225029 19980807; JP 1999-87036 19990329.

AB A chem. amplification-type radiation-sensitive compn. comprising a  
film-forming resin based on a hydroxystyrene in combination with an  
onium salt precursor capable of generating a fluorinated  
alkanesulfonic acid as a radiation-sensitive acid-generating agent.  
This compn. is free from the occurrence of corrosion of an app.  
owing to outgassing, the formation of a T-type pattern and the  
change of line width caused by a delay of processing time, and can  
be used for achieving a high sensitivity and resolving power and a  
good and stable pattern formation.

IT **258872-02-5P**, 4-Hydroxystyrene-4-tert-  
butyloxycarbonyloxystyrene-tert-butyl methacrylate copolymer  
(radiation-sensitive compn. for chem. amplified  
**photoresist**)

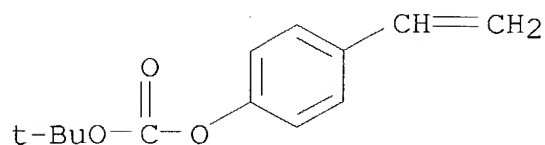
RN 258872-02-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with  
1,1-dimethylethyl 4-ethenylphenyl carbonate and 4-ethenylphenol  
(9CI) (CA INDEX NAME)

CM 1

CRN 87188-51-0

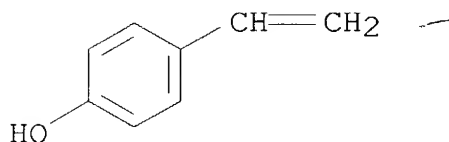
CMF C13 H16 O3



CM 2

CRN 2628-17-3

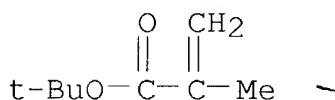
CMF C8 H8 O



CM 3

CRN 585-07-9

CMF C8 H14 O2



- IC ICM G03F007-004  
ICS G03F007-039; G03F007-038; C07C381-12; C07C309-06  
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
ST radiation sensitive compn chem amplification **resist**  
IT **Photoresists**  
- (radiation-sensitive compn. for chem. amplified **photoresist**)  
IT Onium compounds  
(radiation-sensitive compn. for chem. amplified **photoresist**)  
IT 258871-80-6P, Tris(4-hydroxyphenyl)sulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate  
(radiation-sensitive compn. for chem. amplified **photoresist**)  
IT 76-05-1P, preparation 108-90-7P, Chlorobenzene, preparation

109-92-2DP, Ethylvinyl ether, reaction product with functionalized styrene polymer 110-75-8DP, 2-Chloroethylvinyl ether, reaction product with 4-hydroxystyrene homopolymer 536-80-1P, Iodosylbenzene 827-52-1P, Cyclohexylbenzene 2628-17-3P 5292-43-3DP, tert-Butylbromoacetate, reaction product with hydrolyzed 4-tert-Bu polymer 7758-05-6P, Potassium iodate 12124-97-9P, Ammonium bromide 18995-35-2P 24979-70-2DP, 4-Hydroxystyrene homopolymer, reaction product with functionalized vinyl compd. 34619-03-9DP, Di-tert-butylcarbonate, reaction product with 4-hydroxystyrene homopolymer 68734-62-3P, Trimethylsilylnonafluorobutanesulfonate 94287-61-3P 129361-29-1P 130100-38-8P 133685-94-6P 135648-85-0P, 4-Hydroxystyrene-4-methoxystyrene copolymer 144317-44-2P, Triphenylsulfonium nonafluorobutanesulfonate 155040-27-0P, 4-Hydroxystyrene-tert-butyl methacrylate copolymer 158401-89-9P 174476-25-6DP, 4-Acetoxy-4-tert-butyl acrylate copolymer, hydrolyzed, reaction products with Et vinyl ether 175610-67-0P 176747-00-5P, Diphenyliodonium 3,3,3,2,1,1-hexafluoropropanesulfonate 204065-67-8DP, 4-Hydroxystyrene-4-methylstyrene copolymer, reaction product with ethoxy vinyl ether 241806-75-7P, Tris(4-tert-butylphenyl)sulfonium nonafluorobutanesulfonate 258871-76-0P, Tris(4-tert-butylphenyl)sulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-78-2P, Tri(4-tert-butoxyphenyl)sulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-81-7P, Tris(4-tert-butoxycarbonylmethoxyphenyl)sulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-83-9P,  $\beta$ -Oxocyclohexyl 2-norbornylmethyl sulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-84-0P, Bis(4-cyclohexylphenyl)iodonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-85-1P, 4-Methylphenylphenyliodonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-86-2P, Bis(4-tert-butoxyphenyl)phenylsulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-88-4P, Bis(4-methylphenyl)-4-cyclohexylphenylsulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-89-5P, Tris(4-chlorophenyl)sulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-90-8P, 4-Hydroxy-3,5-dimethylphenyldiphenylsulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-91-9P, Di(4-tert-butyloxyphenyl)iodonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-94-2P, Di(4-tert-butylcarbonyloxymethoxyphenyl)iodonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-95-3P, 4-tert-Butylphenylphenyliodonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258871-97-5P, 4-Hydroxystyrene-4-tetrahydropyranyloxystyrene- $\alpha,\omega$ -triethyleneglycol divinyl ether copolymer 258871-99-7P, Tris(tert-butylcarbonylmethoxyphenyl)sulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258872-01-4P, Bis(4-cyclohexylphenyl)phenylsulfonium 3,3,3,2,1,1-hexafluoropropanesulfonate 258872-02-5P,

4-Hydroxystyrene-4-tert-butyloxycarbonyloxystyrene-tert-butyl methacrylate copolymer 258872-05-8P, Diphenyl 4-tert-butylphenylsulfonium nonafluorobutanesulfonate 258872-08-1P, Tris(4-butoxyphenyl)sulfonium nonafluorobutanesulfonate 258872-10-5P, Tris(4-tert-butoxycarbonylmethoxyphenyl)sulfonium nonafluorobutanesulfonate 258872-13-8P 258872-14-9P, Bis(4-cyclohexylphenyl)iodonium nonafluorobutylsulfonate 258872-15-0DP, 4-Acetoxystyrene-styrene-tert-butyl methacrylate copolymer, reaction products with hydroxystyrene polymer deriv. 258873-04-0P, Bis(4-hydroxyphenyliodonium) 3,3,3,2,1,1-hexafluoropropanesulfonate

(radiation-sensitive compn. for chem. amplified

**photoresist**)

IT 67-68-5, Dimethyl sulfoxide, reactions 71-43-2, Benzene, reactions 75-75-2, Methanesulfonic acid 107-59-5, tert-Butyl chloroacetate 357-31-3 375-73-5 507-19-7, tert-Butyl bromide 591-50-4, Iodobenzene 945-51-7, Diphenylsulfoxide 3085-42-5, 4,4'-Dichlorophenyl sulfoxide 5292-43-3, tert-Butylbromoacetate 29342-65-2, 2-Bromonorbornane 137455-55-1, Tris(4-tert-butoxyphenyl)sulfonium 170632-59-4, Bis(4-tert-butoxyphenyl)sulfoxide 258872-06-9, Diphenyl 4-tert-butylphenylsulfonium bromide 258872-11-6, Tris-4(tert-butoxyphenyl)sulfonium nonafluorobutanesulfonate 263871-53-0

(radiation-sensitive compn. for chem. amplified

**photoresist**)

IT 216679-67-3, Megafac R 08 258871-96-4, 4-Hydroxystyrene-styrene-tert-butyl methacrylate copolymer

(radiation-sensitive compn. for chem. amplified

**photoresist**)

L23 ANSWER 34 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

1999:689560 Document No. 131:305155 Polymer material for chemically amplified **photoresist**, **photoresist** composition containing the same and its manufacture. Choi, Sang-Jun (Samsung Electronics Co. Ltd., S. Korea). Ger. Offen. DE 19907700 A1 19991021, 14 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1999-19907700 19990223. PRIORITY: KR 1998-14070 19980420.

AB The polymer material for the chem. amplified **photoresist** is made by polymg.  $\geq 2$  different monomers and the polymer main chain has acid-instable dialkyl malonate groups like di-tert-Bu malonate or di-tetrahydropyranyl malonate. The **photoresist** compn. comprises the above polymer material, a photoacid generator and an org. base.

IT 247098-49-3P, 4-(Di-tert-butylmalonyl methyl)styrene-tert-butyl acrylate-4-hydroxystyrene copolymer 247098-52-8P, 4-(Di-tert-butylmalonyl methyl)styrene-tert-butyl methacrylate-4-hydroxystyrene copolymer

(polymer material for chem. amplified **photoresist**,  
**photoresist** compn. contg. the same and its manuf.)

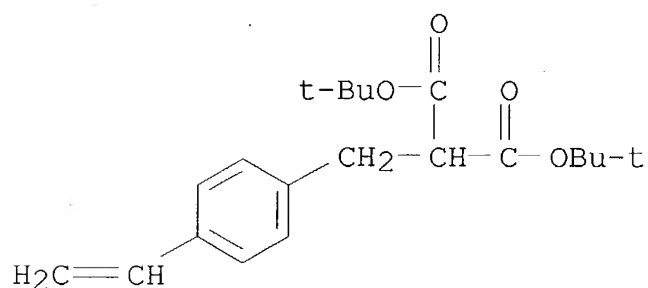
RN 247098-49-3 HCAPLUS

CN Propanedioic acid, [(4-ethenylphenyl)methyl]-, bis(1,1-dimethylethyl) ester, polymer with 1,1-dimethylethyl 2-propenoate and 4-ethenylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 152087-41-7

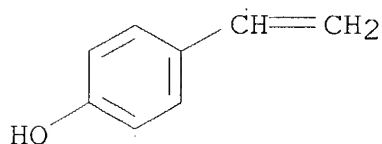
CMF C20 H28 O4



CM 2

CRN 2628-17-3

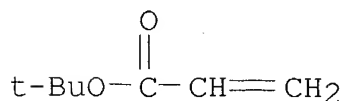
CMF C8 H8 O



CM 3

CRN 1663-39-4

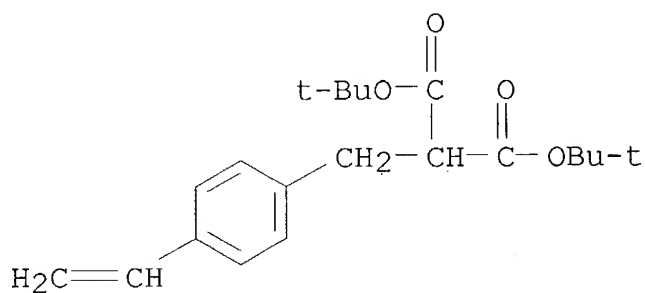
CMF C7 H12 O2



RN 247098-52-8 HCAPLUS  
CN Propanedioic acid, [(4-ethenylphenyl)methyl]-, bis(1,1-dimethylethyl) ester, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate and 4-ethenylphenol (9CI) (CA INDEX NAME)

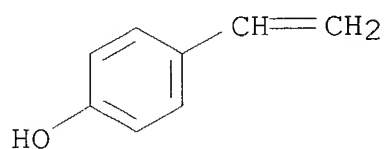
CM 1

CRN 152087-41-7  
CMF C20 H28 O4



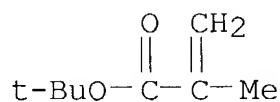
CM 2

CRN 2628-17-3  
CMF C8 H8 O



CM 3

CRN 585-07-9  
CMF C8 H14 O2



- IC ICM C08F212-00  
ICS G03F007-039
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 38
- ST polymer chem amplified **photoresist** compn dialkyl malonate
- IT **Photoresists**  
(polymer material for chem. amplified **photoresist**,  
**photoresist** compn. contg. the same and its manuf.)
- IT 111-42-2, Diethanolamine, uses  
(org. base in chem. amplified **photoresist**)
- IT 66003-78-9, Triphenylsulfonium triflate  
(photoacid generator in chem. amplified **photoresist**)
- IT 247098-44-8P, 4-(Di-tert-butylmalonyl methyl)styrene-4-tert-butoxystyrene-4-acetoxystyrene copolymer 247098-47-1P,  
4-(Di-tert-butylmalonyl methyl)styrene-4-(tert-butoxy)styrene-4-hydroxystyrene copolymer 247098-48-2P, 4-(Di-tert-butylmalonyl methyl)styrene-tert-butyl acrylate-4-acetoxystyrene copolymer **247098-49-3P**, 4-(Di-tert-butylmalonyl methyl)styrene-tert-butyl acrylate-4-hydroxystyrene copolymer 247098-50-6P,  
4-(Di-tert-butylmalonyl methyl)styrene-tert-butyl methacrylate-4-acetoxystyrene copolymer **247098-52-8P**,  
4-(Di-tert-butylmalonyl methyl)styrene-tert-butyl methacrylate-4-hydroxystyrene copolymer  
(polymer material for chem. amplified **photoresist**,  
**photoresist** compn. contg. the same and its manuf.)
- IT 541-16-2, Di-tert-butylmalonate 30030-25-2  
(prepn. of monomers for manufg. chem. amplified **photoresist**)
- IT 152087-41-7P  
(prepn. of monomers for manufg. chem. amplified **photoresist**)
- L23 ANSWER 35 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN  
1998:555888 Document No. 129:209343 Chemically amplified  
**resist** containing vinylbenzenepropionic acid derivative  
copolymer and pattern formation using same. Yamashita, Yoshio (Oki  
Electric Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP  
10228112 A2 19980825 Heisei, 9 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1997-33846 19970218.
- AB The title **resist** contains, as a base resin, a (co)polymer  
having a monomer unit  $\text{CH}[\text{C}_6\text{H}_4\text{CR}(\text{CH}_2)_n\text{CO}_2\text{H-p}]\text{CH}_2$  ( $\text{R} = \text{H}$  or  $\text{CmH}_{2m+1}$ ;  $m = 1-3$ ) or a (co)polymer prepd. by polymn. of monomer(s) contg.  
 $\text{CH}_2:\text{CH}[\text{C}_6\text{H}_4\text{CR}(\text{CH}_2)_n\text{CO}_2\text{H-p}]$ . The **resist** may contain (1) a  
p-vinyl- $\beta$ -alkylhydrocinnamic acid-tert-Bu p-vinyl- $\beta$ -  
alkylhydrocinnamate copolymer or a p-vinylphenyl- $\beta$ -  
alkylhydropropionic acid-methacrylic ester copolymer as a base resin  
and an acid-generating agent that generates acid upon light irradiation.



or (2) a p-vinylphenyl- $\beta$ -alkylhydropropionic acid-Me p-vinyl- $\beta$ -alkylhydrocinnamate copolymer base resin, the acid-generating agent, and a dissoln. inhibitor that inhibits the soly. of the base resin in alk. solns. and is decompd. by the action of the acid to lose the dissoln. inhibiting ability. A patterning method using the compns. is also claimed. The **resists** show high transparency toward ArF excimer lasers and dry etching resistance.

IT 212255-88-4P

(chem. amplification **resist** compn. contg.

vinylbenzenepropionic acid deriv. copolymer and acid generator)

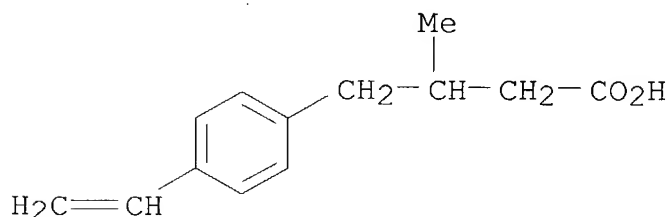
RN 212255-88-4 HCAPLUS

CN Benzenebutanoic acid, 4-ethenyl- $\beta$ -methyl-, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 212255-87-3

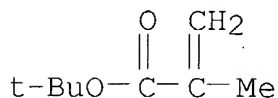
CMF C13 H16 O2



CM 2

CRN 585-07-9

CMF C8 H14 O2



IC ICM G03F007-039

ICS G03F007-004; G03F007-40; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 38

ST **resist** vinyl benzenepropionic acid copolymer; acid

generator **resist**; dissoln inhibitor chem amplification  
**resist**

IT **Resists**

(chem. amplification; chem. amplification **resist** compn.  
contg. vinylbenzenepropionic acid copolymer and acid generator)

IT 212255-81-7P 212255-85-1P **212255-88-4P**

(chem. amplification **resist** compn. contg.  
vinylbenzenepropionic acid deriv. copolymer and acid generator)

IT 66003-78-9, Triphenylsulfonium triflate

(chem. amplification **resist** compn. contg.  
vinylbenzenepropionic acid deriv. copolymer and acid generator)

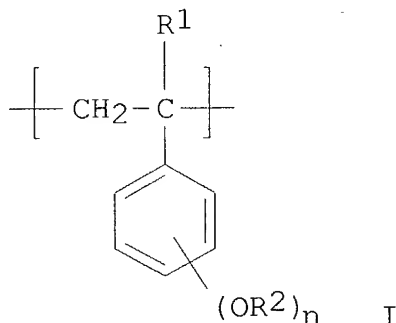
IT 37994-89-1

(dissoln. inhibitor; chem. amplification **resist** compn.  
contg. vinylbenzenepropionic acid deriv. copolymer and acid  
generator)

L23 ANSWER 36 OF 36 HCAPLUS COPYRIGHT 2004 ACS on STN

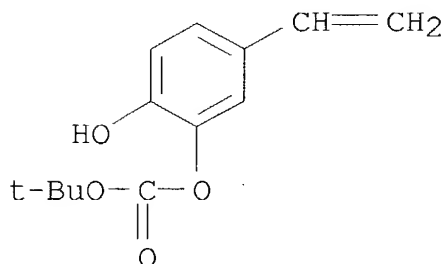
1997:168467 Document No. 126:164258 Polymer compounds and chemically  
amplified positive-type **photoresists** using the same  
providing heat-resistant **resist** patterns. Watanabe,  
Osamu; Takeda, Yoshifumi; Tsucha, Junji; Ishihara, Toshinobu  
(Shinetsu Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo  
Koho JP 08337616 A2 19961224 Heisei, 38 pp. (Japanese). CODEN:  
JKXXAF. APPLICATION: JP 1996-90203 19960319. PRIORITY: JP  
1995-111189 19950412.

GI

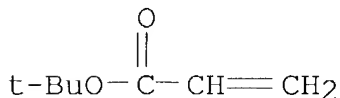


AB The title polymers have the general formula I ( $\text{R}^1 = \text{H}, \text{Me}$ ;  $\text{R}^2 = \text{H}$ ,  
acid-labile group; at least one of  $\text{R}^2$  is H and acid labile group;  $n$   
 $= 2, 3$ ) of Mw 3000-300,000 and are used with org. solvents and acid  
generator and optionally phenolic dissoln. control agents for  
**resists**. A **resist** comprised 3,4-  
Me<sub>3</sub>COCO<sub>2</sub>(HO)C<sub>6</sub>H<sub>3</sub>CMe:CH<sub>2</sub> polymer 80, p-Me<sub>3</sub>COC<sub>6</sub>H<sub>4</sub>S+Ph<sub>2</sub> p-MeC<sub>6</sub>H<sub>4</sub>SO<sub>3</sub>- 3,  
and DGLM 300 parts.

IT 186768-88-7P  
 (polymer compds. and chem. amplified pos.-type  
**photoresists** using the same providing heat-resistant  
**resist** patterns)  
 RN 186768-88-7 HCAPLUS  
 CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with  
 1,1-dimethylethyl 5-ethenyl-2-hydroxyphenyl carbonate (9CI) (CA  
 INDEX NAME)  
 CM 1  
 CRN 186768-83-2  
 CMF C13 H16 O4



CM 2  
 CRN 1663-39-4  
 CMF C7 H12 O2



IC ICM C08F012-22  
 ICS C08F220-06; G03F007-004; G03F007-039; H01L021-027  
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 35  
 ST hydroxystyrene polymer **photoresist**; acid generator  
**photoresist**; dissoln control agent **photoresist**;  
 amine additive **photoresist**; sulfonium compd acid generator  
 IT Positive **photoresists**  
 (polymer compds. and chem. amplified pos.-type  
**photoresists** using the same providing heat-resistant

resist patterns)

IT Amines, uses  
Bases, uses  
Sulfonium compounds  
(polymer compds. and chem. amplified pos.-type  
**photoresists** using the same providing heat-resistant  
resist patterns)

IT Acids, uses  
(precursors; polymer compds. and chem. amplified pos.-type  
**photoresists** using the same providing heat-resistant  
resist patterns)

IT 186768-70-7P 186768-72-9P 186768-74-1P 186768-76-3P  
186768-78-5P 186768-80-9P 186768-82-1P 186768-85-4P  
186768-86-5P 186768-87-6P **186768-88-7P** 186768-89-8P  
186768-90-1P 186768-91-2P 186768-93-4P 186768-94-5P  
186768-97-8P 186768-99-0P 186769-00-6P 186769-01-7P  
186769-03-9P 186769-05-1P  
(polymer compds. and chem. amplified pos.-type  
**photoresists** using the same providing heat-resistant  
resist patterns)

IT 56-41-7, Alanine, uses 62-53-3, Aniline, uses 95-84-1,  
2-Amino-p-cresol 102-71-6, uses 110-60-1, Tetramethylenediamine  
110-70-3, N,N'-Dimethylethylenediamine 110-89-4, Piperidine, uses  
120-73-0, Purine 127-19-5 142-08-5, 2-Hydroxypyridine  
4458-32-6, Methylethylpropylamine 14159-45-6 34521-19-2,  
Pyridinesulfonic acid 104105-16-0 117458-06-7 123589-22-0  
125325-82-8 129674-22-2 141573-11-7 145685-50-3 147625-42-1  
151319-83-4D, 2-ethoxyethyl ethers 157089-24-2 158593-28-3  
161453-44-7 162102-77-4 168766-36-7D, tert-Bu ethers  
170632-63-0 180801-55-2 186769-06-2 186769-08-4 186769-10-8  
186769-11-9 186769-12-0 186769-14-2 186811-04-1  
186811-05-2D, tert-Bu carbonates 186811-06-3 186811-07-4  
186811-08-5 186912-09-4 186912-10-7  
(polymer compds. and chem. amplified pos.-type  
**photoresists** using the same providing heat-resistant  
resist patterns)

=> d 120 1-9 ti

L20 ANSWER 1 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN

TI Synthesis and evaluation of a solid supported molecular tweezer type  
receptor for cholesterol

L20 ANSWER 2 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN

TI Aircraft deicing/anti-icing universal fluids

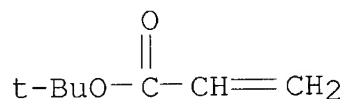
L20 ANSWER 3 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN

- TI Aircraft deicing/anti-icing fluids thickened by associative polymers
- L20 ANSWER 4 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
- TI Glycol-based aircraft anti-icing fluids thickened by associative polymers containing hydrophobe-bearing macromonomers
- L20 ANSWER 5 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
- TI Complex hydrophobe compounds, macromonomers, and macromonomer-containing polymers
- L20 ANSWER 6 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
- TI Aircraft anti-icing fluids thickened by associative polymers
- L20 ANSWER 7 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
- TI Electrophotographic photoreceptor
- L20 ANSWER 8 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
- TI High-contrast rapid-processing silver halide photographic material spectrally sensitized with merocyanine dye
- L20 ANSWER 9 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
- TI Silver halide color photographic materials

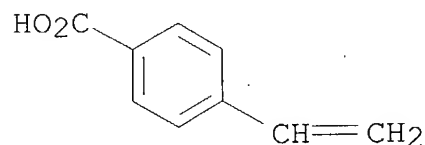
=> d 120 7 cbib abs hitstr hitind

- L20 ANSWER 7 OF 9 HCAPLUS COPYRIGHT 2004 ACS on STN
- 1994:311399 Document No. 120:311399 Electrophotographic photoreceptor. Kato, Eiichi; Ishii, Kazuo (Fuji Photo Film Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 05113673 A2 19930507 Heisei, 55 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-302665 19911023.
- AB In the title photoreceptor comprising a photoconductive layer contg. at least an inorg. photoconductive material, a spectral sensitizing dye, and a binder resin, the above binder resin contains resin A, and resin B. The above resin A is a star type copolymer (wt. av. mol. wt.  $1 \times 10^3 - 2 \times 10^4$ ) comprising  $\geq 3$  AB type block polymeric chains bonded to an org. mol. with block A contg. monomeric unit  $\text{CHa1Ca2O2R3}$  [ $\text{a1, a2} = \text{H, halo, CN, hydrocarbon}$ ;  $\text{R3} = \text{hydrocarbon}$ ], and block B contg. a monomeric unit contg. a polar group(s) selected from  $\text{PO3H2, SO3H, CO2H, P(O)(OH)R1}$  [ $\text{R1} = \text{hydrocarbon, OR2}$  ( $\text{R2} = \text{hydrocarbon}$ )] and groups contg. cyclic acid anhydride. The resin B is a star type copolymer (wt. av. mol. wt.  $2 \times 10^4 - 1 \times 10^6$ ) comprising  $\geq 3$  polymeric chains bonded to an org. mol. with the polymeric chains contg.  $\text{CHa1Ca2O2R3}$  30 wt.% and a monomeric unit (0.05-10 wt.%) contg. a polar group defined in A. The photoreceptor shows superior electrostatic properties (esp. in severe conditions) and good mech. properties to give sharp images, and it is very useful in semiconductor laser scanning-exposure.

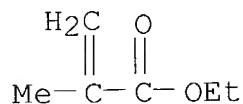
IT 155218-06-7P  
(star-branched, prepn. and use of, electrophotog. photoreceptor  
binder resin from)  
RN 155218-06-7 HCAPLUS  
CN Benzoic acid, 4-ethenyl-, polymer with 1,1-dimethylethyl  
2-propenoate and ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)  
  
CM 1  
  
CRN 1663-39-4  
CMF C7 H12 O2



CM 2  
  
CRN 1075-49-6  
CMF C9 H8 O2



CM 3  
  
CRN 97-63-2  
CMF C6 H10 O2



IC ICM G03G005-05  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
IT 25133-97-5P 27155-22-2P 141681-05-2P 141681-10-9P

144328-03-0P	144407-88-5P	146056-80-6P	149341-90-2P
152792-18-2P	152792-20-6P	152792-21-7P	152792-22-8P
152792-23-9P	152792-24-0P	152792-25-1P	152792-27-3P
152792-28-4P	152792-29-5P	152792-35-3P	153772-11-3P
153772-12-4P	153772-13-5P	153772-14-6P	153772-15-7P
153772-16-8P	153772-17-9P	153772-18-0P	153772-19-1P
153772-20-4P	153772-22-6P	153772-23-7P	153772-24-8P
153772-25-9P	153772-26-0P	153772-28-2P	153772-29-3P
153772-42-0P	153832-26-9P	<b>155218-06-7P</b>	

(star-branched, prepn. and use of, electrophotog. photoreceptor  
binder resin from)

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